Issue 305

Good woodworking

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The No.1 magazine for aspiring designer makers

WIN! 1 OF 10 HEDGEHOG EASY AIR WEDGES

NEW LOOK!

Mark Doolittle's ORGANIC SCULPTURES

What happens when biology meets art

5-STAR KIT

Andy King loves these DeWalt nailguns

MILWAUKEE'S 2016 CONFERENCE

ANDY KING CZECHS OUT THE LATEST TOOLS IN PRAGUE

PLUS...

- Michael Huntley looks at free-standing buildings
- Make Carl Jacobson's folding cedar lawn chair
- Part 2 of Shaun Newman's ukulele build

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'Some of my favourite things from this issue'

Welcome

This has actually been a very enjoyable issue to put together, mainly because I feel I've learnt a lot and my eyes have been opened to some wonderful techniques (none of which I could ever hope to master myself!) but which have really made me marvel at the limits of a person's creativity. The person I'm particularly thinking of is the subject of this month's feature: Mark Doolittle. I found it amazing to learn that this chap not only has a PhD in biology but has used his vast knowledge and fascination of natural organisms, cells and tissues to create mind-blowing pieces such as the one shown above (which is actually carved from a gourd.) As I say in the profile, I was convinced the first piece of Mark's I saw was actually coral, as it looked identical to the natural structure, but to be able to recreate such a piece in wood, using only a rotary carving machine and hand carving, is absolutely astonishing. It was a pleasure to profile Mark as he is so open in sharing his processes and techniques with others, something that definitely needs to happen more.

Targeting the youth

Recently, I've reached out to a lot of young designer-makers with a view to encouraging them to appear in the magazine and show their work to all. I've been blown away by the positive responses I've received, so a big thank you to all who've sent me photos of their pieces and information to feature on why they love doing what you do. I've realised that every single maker has a different story to tell in terms of how they came to discover woodworking, and the trials and tribulations they've encountered along the way. What is great to see is the tenacity and fire that these young makers have for the careers they've chosen. I loved speaking to 13-year-old Ben Roch who tries to get into the workshop with his granddad as much as he can, where they make all manner of projects together. This made me smile no end.

A wonderful community

While I do receive my fair share of letters and emails (thank you!) it would still be great to hear more from you, so please do feel free to share your thoughts and opinions on the magazine. I'd love to know what you all think of the redesign – be it good or bad! Also, if you have anything you'd like to share with other readers, such as the odd technique, anecdote or top tip, please do jot it down and send it off. The world of woodworking is such an intriguing and wonderful place, so let's do our best to try to make it even better. **GW**

Enjoy! *Tegan*

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Consultant Editor

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Uku can do it! Part 2

Carrying on from issue 303, in the second part of this series, Shaun Newman shows you how to make the ukulele's rosette, how to brace and fit the front, and puts the back into place

Good woodworking

May 305

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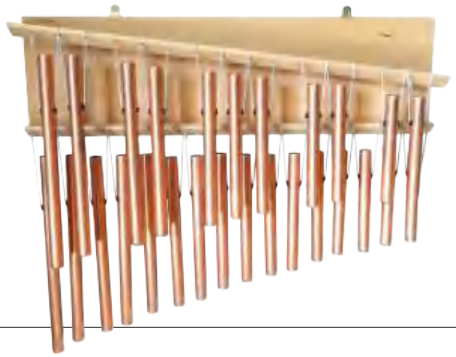

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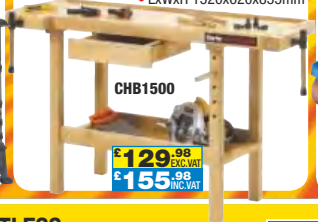

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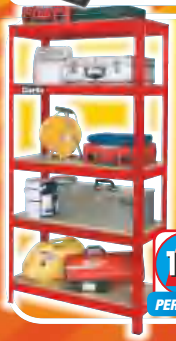

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CDP202B	450 / 16	£159.98	£191.98
CDP10B	370 / 12	£169.98	£203.98
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CBS350	340mm/14"	225mm	160mm	£449.00	£538.80

Clarke JIGSAWS

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MODEL	MOTOR	SPEED RPM	EXC. VAT	INC. VAT
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TH-SS405E	1200W	400-1600	£79.98	£95.98

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CRT-1

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CWL325V

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BOSCH

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CR1C

*DIY

MODEL	MOTOR (W)	PLUNGE (mm)	EXC.VAT	INC.VAT
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Bosch POF1400ACE	1400	0-55	£79.98	£95.98
CR2	2100	0-60	£109.98	£131.98

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With sanding belt
‡ was £67.19 inc.VAT

CBG6RP

MODEL	DUTY	WHEEL DIA.	EXC.VAT	INC.VAT
CBG6RP	DIY	150mm	£29.98	£35.98
CBG6RZ	PRO	150mm	£39.98	£47.98
CBG6RSC	HD	150mm	£49.98	£59.98
CBG6SB#	PRO	150mm	£49.98	£59.98
CBG6RWC	HD	150mm	£54.99	£65.99
CBG8W (wet)‡	HD	150/200mm	£49.98	£59.98

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		WOLVERHAMPTON Parkfield Rd. Bilston	01902 494186
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Wood Awards 2016: call for entries launched

The Wood Awards: Excellence in British Architecture and Product Design has now launched its 2016 call for entries. Architects and designers from around the United Kingdom are invited to enter their wood-based projects and have until 27 May to submit their entries.

Established in 1971, the Wood Awards recognises, encourages and promotes outstanding design, craftsmanship and installation using wood in projects throughout the UK. The Wood Awards' elite independent judging panel not only judges all submitted entries but also visits the shortlisted projects in person, helping to make this a uniquely rigorous competition.

The Wood Awards shortlist will be announced in July and the winners will be unveiled at the Wood Awards ceremony in London on 22 November 2016. The shortlisted projects will be on display at the ceremony and during the London Design Festival.

New judges

Michael Morrison of Purcell and Max Fraser of Spotlight Press return as chairmen of the Buildings and Furniture & Product judging panels. New to the Furniture & Product judging panel is Ruth Aram. Ruth heads up buying for the renowned Aram Store, based in Covent Garden. She says: "I grew up with design all around me. This unfettered access to design on a daily basis has greatly influenced who I am today and generated a hunger and passion for design."

Social media channels

Also new this year, everyone will be able to nominate contenders easily via Instagram and Twitter using the hashtag #WoodAwards2016. Once again within the Furniture & Product competition there will be a Student Award, recognising the value of student work in wood with £1,500 in prize money (£1,000 for the winner and £500 for People's Choice).

The Wood Awards top prize, the Arnold Laver Gold Award, goes to the overall winner of winners. Last year's winner was 'The Fishing Hut' by Niall McLaughlin Architects (pictured above). All previous category winners from 2003 onwards can now be found on the new digital archive on the Wood Awards' website.

With permission from the owner, anyone associated with a building or product completed in the last two years can enter. Buildings must be located within the UK while furniture and other products must have either been designed or manufactured in the UK. There are no restrictions on the size, budget or function of entries. The competition is free to enter and entrants may submit more than one project.

Sponsors

As a not-for-profit competition, the Wood Awards can only exist due to collaborative industry sponsorship. Arnold Laver sponsors the Arnold Laver Gold Award, which is the project that the judges deem to be the best of all the winners. Major Sponsors of the Wood Awards 2016 are American Hardwood Export Council, Carpenters' Company, TRADA and Wood for Good. Other sponsors include American Softwoods, British Woodworking Federation, Confederation of Timber Industries, Furniture Makers' Company, Forestry Commission and Timber Trade Federation. To find out how you can enter, see www.woodawards.com.

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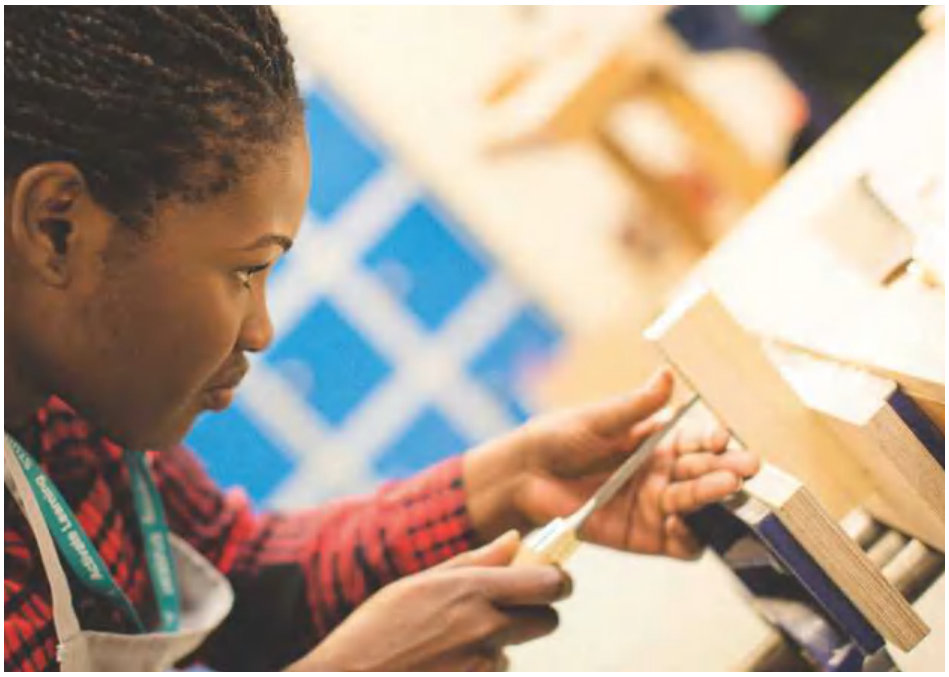
IRWIN® TOOLS

New partnership builds on furniture training heritage



A new educational partnership is to continue a rich heritage of preparing furniture designers and makers for their future careers. The Rycotewood Furniture Centre has partnered with Oxford Brookes University to deliver the Furniture: Design and Make Foundation Degree and BA (Hons). Rycotewood's programmes have been validated by Oxford Brookes and will be delivered at City of Oxford College, which is part of Activate Learning.

Joe Bray, higher education programme coordinator at Activate Learning, said: "The Rycotewood name has a rich heritage in furniture design and making. The centre has been training students in the design and craft of fine furniture since the 1930s. Our students have gone on to work for companies such as Benchmark, Matthew Burt and Philip Koomen as well as building enviable reputations as bespoke designers and makers. Students also achieve success in national competitions on an annual basis. In 2015, these included winners of the prestigious Alan Peters' Award and the Worshipful Company of Furniture Makers' Bespoke Student Awards."

The announcement follows a report published by the Quality Assurance Agency for Higher Education (QAA) in December, which highlighted student employability as a key strength of Activate Learning's higher education programmes. This means that all Activate Learning Foundation Degrees and BA Hons programmes are now delivered in partnership with Oxford Brookes University.

This Degree is a full-time, two-year course and on completion, students can choose to take a further top-up year to achieve the BA (Hons) qualification. The courses are now open for entries, so to find out more, visit www.activatelearning.ac.uk/universitylevel.

Perfect pockets at twice the speed with Kreg's Foreman Pocket-Hole Machine

Drill precise pocket holes in a fraction of the usual time with the all-new Kreg Foreman Pocket-Hole Machine DB210-EUR. One pull of the handle starts the powerful 240V motor, clamps your workpiece securely in place, and raises the drill bit through the table. This simple operation creates a precisely-placed pocket hole at the perfect depth in materials from 12 to 38mm-thick.

The all-new Foreman Pocket-Hole Machine is packed with features, offering all of the capabilities of Kreg's professional-grade machines in a tool that is versatile, portable, and affordable.

To ensure perfect pocket-hole placement, the machine features a tool-free adjustable fence that positions the workpiece for precise pocket depth, and a pair of adjustable, spring-loaded stops for repeatable accuracy. Plus, clear markings in the large table make it easy to position the fence for your material thickness.

The Foreman Pocket-Hole Machine comes with a standard 10mm Kreg step drill bit for materials from 12 to 38mm-thick. It is also compatible with the Kreg Micro-Pocket™ Bit for creating more compact pocket holes, and the Kreg® HD (Heavy-Duty) Bit for creating strong joints in material up to 38mm-thick.

The Foreman's lightweight yet durable construction is easily transported and perfect for use in your workshop. Even with this portability, the Foreman still features a large table with ample workspace. The built-in storage tray means that extra bits and accessories can be kept close at hand and it also includes a dust collection attachment to keep your work area clean.

Priced at £449.58, see www.kregtool.eu.

New from Tormek, the SVD-186 jig

The SVD-186 allows you to sharpen your woodturning gouges to a razor-like sharpness with full control and you can also use it for woodcarving tools. Used correctly, there is no other method that can give you faster or sharper results.

The SVD-186 and Tormek sharpening machine combination offers three crucial benefits. The water-cooled wheel results in a superior, longer lasting edge and one that leaves a finer finish. The jig gives you full control over bevel angle and shape. The SVD-186 gives exact replication of both the shape and edge angle next time you need to sharpen your tool. The angle setting has a precise click feature making initial jig setup easy. The SVD-186 fits all Tormek machines and is currently priced at £59.96; for more info, see www.brimarc.com.

New Alcro 'Servalac' paint revives and refreshes wood

New 'Servalac' from Alcro, Sweden's leading paint brand, is a high quality, water-based paint perfect for interior woodwork, joinery and primed metal. Now available in the UK, Servalac has been specifically formulated for use in kitchens to provide a highly durable and hard-wearing finish that can be wiped without the colour fading .

Perfect for painting kitchen unit cabinets, doors, shelves and furniture, Servalac is available in a choice of three sheen levels and an extensive palette of thousands of stylish colours. The product is also environmentally friendly and has passed EU tests for being child-safe, so is great for painting woodwork in children's bedrooms and nurseries.

Available in 500ml or 1l tins or a 3l tub, prices start from £14.95. For more info and free colour cards, visit www.alcropaints.co.uk.

Dreamland supports MakeIT! Students in Kent

Students from Chatham & Clarendon Grammar School in Ramsgate, Kent are taking the Proskills' Schools into Industry programme, MakeIT! to a whole new level by creating designs in partnership with recently renovated local heritage theme park, Dreamland, in Kent.

The development officer for the park has set the themes which need to be covered and the students have created new project specifications for both MakeIT! Wood and MakeIT! Furniture, which are being put to the test.

Some prerequisites of this new project are that wood from the oldest wooden scenic railway in the UK is to be upcycled and used in the design and manufacture of the project entries.

If any of the student designs are good enough, they will be reproduced for display in the Ballroom at Dreamland and will be manufactured full-scale for Dreamland by their skilled staff.

Students in the running for this accolade are designing an under-fives play area, furniture and lighting for the ballroom, privacy screens, and stools for the bar area.

The entries from Chatham & Clarendon Grammar School this year will have come from 30 students in year 12 and 45 students in year 10. The students are managed by three teachers: Tom Brewin, Michael Spain and Adam Taylor, with essential input from Dreamland personnel.

We wish the students the very best of luck! To find out more, see www.proskills.co.uk.

COURSE DIARY

May is nearly here, so why not take up a new woodworking skill?

May
4 Bandsaws *
6 Introduction to Leigh jigs
9–10 & 17–18 * Bowls & platters
10–11 Wood machining
12 & 13 Sharpening with Tormek
12–13 & 26–27 * Beginners' woodturning
19 Kitchen door/jointing
24 Turning pepper mills

* Course held in Sittingbourne, Kent
Axminster Tools & Machinery
Unit 10 Weycroft Avenue
Axminster, Devon EX13 5PH
Tel: 08009 751 905
Web: www.axminster.co.uk

20–22 Netsuke carving
24 Woodturning – making a small bowl
24–27 Starting out in woodturning
27–30 Furniture making – the apprentice's stool

West Dean College
West Dean, near Chichester
West Sussex PO18 0QZ
Tel: 01243 811 301
Web: www.westdean.org.uk

9–13 Conquering chairs – making a child's chair
16–20 Understanding veneering – making an inlaid tray
21–22 Cabinetmaking fundamentals
23–27 Beautiful boxes – learning to love laminating

John Lloyd Fine Furniture
Bankside Farm, Ditchling Common
Burgess Hill, East Sussex RH15 0SJ
Tel: 01444 480 388
Web: www.johnlloydfinefurniture.co.uk

7, 14 & 22 Drills in a day
8 Hand caning furniture
21 Intro to woodturning

The Goodlife Centre
122 Webber Street, London SE1 0QL
Tel: 0207 760 7613
Web: www.thegoodlifecentre.co.uk

16 Router skills
27–30 Beginners' four-day course

Chris Tribe
The Cornmill, Railway Road
Ilkley, West Yorkshire LS29 8HT
Tel: 01943 602 836
Web: www.christribefurniturecourses.com

Spring Tools UK

Andy King and Phil Davy's annual pilgrimage to the Totally Tools Show at the Ricoh Stadium in Coventry usually gives rise to a few new tools to discuss or review over the coming months. Regular readers may remember the excellent Spring Tools' nail punches reviewed in *GW*275 where pins and nails can be set without the need of a hammer. The only downside was the need to send to the USA for them, but the Spring Tool range was being launched at the show and is now available directly in the UK for the first time. For more info, visit www.springtools.co.uk.

Pyro Master from Antex Craft

Create personalised wooden gifts and decorative patterns with this pyrography tool. Burn creative designs or wording onto wood and leather products – the possibilities are endless: name plates, egg cups, wooden spoons, chopping boards, etc.

The Pyro Master comes with 19 different tips for branding, drawing and shading – this is the Antex entry level pyrography tool for decorative items.

It comes with a safety stand plus a keyring and leather fridge magnet to get you started. Priced at just £24.95 from Antex Craft, see www.antexcraft.com for more info.

Weald of Kent Craft & Design Show

The Weald of Kent Craft & Design Show will be making a return to Penshurst Place, near Tonbridge this year from 30 April–2 May. A chance to discover beautifully crafted British products, one of the most prestigious craft shows in the country will have something for all the family with 250 stands available to enjoy.

Visitors can expect to see exquisite pieces made by British craftsmen and women with beautifully handmade and hand-finished furniture and glassware, jewellery, luxury beauty products and leather goods. With plenty to explore in the marquees, it is the perfect opportunity to pick up something unique for the home. Lovers of the craft and design of bygone eras as well as retro and antique looking pieces will be delighted with the show's new vintage-styled, finished crafts stands.

For those looking to learn more about the art of crafting there will be plenty of demonstrations to marvel at and workshops giving visitors the chance to try something new. It's the perfect opportunity to have a go at traditional, heritage crafts as well as contemporary handicraft.

After a good browse of the stands, visitors can relax in the beautiful grounds with some quality refreshment from a choice of tempting food stands and to keep the youngsters entertained, there will be plenty of family-friendly activities and a children's play area. The fascinating Birds and Beasts Roadshow tops off a perfect day where you can see exciting falconry displays by popular falconers Leigh and Jo Holmes.

To find out more and to buy tickets, visit www.thecraftshows.co.uk.

OFFCUTS

Axminster Tools & Machinery will be holding a series of demonstrations of the Leigh range of dovetail jigs at its stores throughout 2016.

The Leigh system can be a complex kit, but it is capable of producing excellent dovetails. A key member of staff in each Axminster store has been specially trained to show just how easy it is to create perfect dovetails. In addition, there will be the opportunity for customers to try before they buy and have their machine set up for free when they actually purchase a Leigh jig.

Anyone wishing to see a Leigh demonstration will be able to do so at the following stores:

- **Cardiff** – Friday 29 April
- **High Wycombe** – Saturday 30 April
- **Nuneaton** – Saturday 7 May and Friday 23 & Saturday 24 September
- **Sittingbourne** – Saturday 18 June
- **Axminster** – Saturday 16 July

If you are unable to make one of these events, there is the opportunity to contact your nearest store and arrange for a personal demonstration with a trained demonstrator.

There will also be a chance later in the year to see Leigh jigs being demonstrated at the North of England Woodworking & Power Tool Show in Harrogate from 18–20 November.

For a more in-depth familiarisation of the Leigh jigs, Axminster offers a one-day introductory course at its Skill Centres in Axminster (Devon) and Sittingbourne (Kent). Dates and further details about the course can be found at www.axminsterskillcentre.co.uk.

Booming Barnsley business doubles workforce through apprentice programme

Worsbrough-based Booths Manufacturing was launched by father and son team Derek and Adam Booth in 2010 and currently produce a range of more than 500 bespoke wooden products for the home, which are distributed to retailers across the UK.

Faced with a bulging order book and struggling to keep up with demand, Derek turned to the internet for help where he discovered Skills Made Easy, a unique programme aimed at helping businesses to overcome skills shortages.

Skills Made Easy helped the company to identify suitable candidates, as well as helping to develop a training framework to meet the needs of business, allowing the apprentices to work towards a recognised qualification. After interviewing two potential apprentices, Derek was unable to choose between them, so he decided to offer them both a job!

Since joining the company Sam Andrews (17) and Jooren Bloomaerte (17) have learned how to produce products using CNC routers and precision laser-cutting equipment, as well as spending time working towards apprenticeship qualifications in design.

To find out more about this great scheme, see www.skillsmadeeasy.org.uk.

Weird and Wonderful Wood 2016

Weird and Wonderful Wood is returning to Haughley Park from 14–15 May this year. This event is a celebration of many aspects of woodwork, showcasing the talents of specialist woodworkers.

The event attracts over 8,000 visitors from far and wide over two days, including people who return each year. There are always new things to see and at this year's event the site will play host to a replica 46ft Saxon ship, a shepherds hut and will welcome some fascinating musical instrument makers, a horse logger and a woodcarver from Nigeria.

You can expect to see demonstrations in woodcarving and sculpture, fine furniture making, displays by traditional fletchers and bowyers, chainsaw carving, hurdle making, woodturning, pole-lathe turning as well as traditional gypsy caravan displays.

Weird and Wonderful Wood is a unique event which is never the same from year to year, but one aspect that never changes is the very special atmosphere that sees people returning time and time again.

To find out more, see www.weirdandwonderfulwood.co.uk.

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Record DML lathe, 24 or 36in between centres, made in Sheffield and in very good condition; £100 – call for details
01992 620 996 (Herts)

Record Bandsaw BS400 as new, depth of cut – 12in; width of cut – 16in; £500. Hegner Multicut 52 variable-speed, in excellent condition; £300. Buyer to collect
01777 870 309 (Newark)

Shopsmith Mk5 lathe complete with bandsaw, jointer, circular saw, spare tipped blade, moulder, sanding disc, extended table, plus many extras. Call to make an offer and for more details
01476 561966 (Lincs)

Hegner HBD200XL woodturning lathe with electronic speed, TO 3800 Multistar Duplex chuck, Vicmarc VM90 chuck, live and dead centres; £950. Buyer collects
01767 316 925 (Beds)

Scheppach Basato 4 bandsaw, little used with four unused spare blades; £400
01912 367 455 (Durham)

Axminster woodturning lathe, includes 16 chisels, chuck indexing ring and hole boring kit; £150. Buyer collects
01223 503 860 (Cambridge)

MISCELLANEOUS

Four *Good Woodworking* binders, in good condition; £15
(01902 762 188) Wolverhampton

Charnwood chuck to fit Nova thread; £50; numerous turning tools; £190; 56lb 6in ceramic tiles; £42; eight books; £5 each; eight acrylic pen holders; £28; chainsaw bib and brace, plus helmet; £65
01209 211 522 (Cornwall)

Good Woodworking issues 30-282 (missing 61, 105, 189 and 280) plus three binders; *Woodturning* issues 25-199 inc.; *The Woodworker* Vol.1, No.1 to Vol. 8, No.5. inc. Free but to be collected
01279 505 396 (East Herts)

Good Woodworking magazines, Nos. 1-177, inclusive; £50 ONO – buyer collects
01460 394 234 (Somerset)

Lie-Nielsen No.85 cabinet-maker's scraper plane, used once as new, boxed; £130, and Veritas bronze edge plane, rare and in lovely condition; £90
01992 620 9961 (Herts)

Big Brother Hollower – handle and shaft, no cutter, in good condition, little use, complete with cutter screw and Allen keys; £55
01912 672 121 (Newcastle/Tyne)

Trend Airshield respirator/face mask complete with charger and new filter. In good, clean condition and quiet in operation; £85 ONO
07816 371 684 (Newcastle on Tyne)

Nailed it!

These three nailguns from DeWalt all benefit from exceptional ease of alignment as well as positioning and firing, helping to deliver high accuracy each and every time you use them

The freedom battery tools offer us is not always a necessity, especially in the workshop where power is normally readily available. In such situations a corded tool can often bump through work more readily under load, but when it comes to nailers, because of the way they work, I've always found electric models come up incredibly short for power and capacity, so in the workshop it's ideally a gas or battery powered gun or an air-powered option, and the air powered option is ultimately a very efficient way of getting consistent results.

For me, DeWalt certainly hold the aces in the gas and battery nailer market, but the freedom they offer comes at the cost of physical size and weight; therefore it makes sense to fall back on a smaller and lightweight option if you don't need that freedom, and if you own a compressor, or are looking towards that area, that's where these air nailers really make their mark.

Trade-rated

DeWalt are aiming for the trade end of the spectrum with these guns, and the three options available cover three different nail gauges: the DPN1850PP, which fires finer 18 gauge in 15-50mm lengths; the DPN1664PP, which shoots 16 gauge with lengths in the range of 25-64mm; and the biggest gun, the DPN1564APP, which knocks in 15 gauge in lengths of 32-64mm.

These capacities and gauges are consistent in the industry so there's no need to hunt specialised fixings, but there are of course specialist nails available, such as stainless steel for external work, for example.

'Precision Point'

But it's the guns themselves that stand out against current opposition, and it's the 'PP' suffix in each gun that holds the clue to the main difference.

This relates to the 'Precision Point' nose feature common across all three guns; each one has a very fine profile when compared to guns of similar stature. It means that not only can you get the guns into tighter spots if needed, but more importantly, the nose can be positioned very accurately.

For setting fixings when securing components such as beads, or pinning thinner pieces to one another such as box sides, it means the fixings can be positioned with more precision and consistency to prevent splitting or the fixings breaking though the face of the work.

I tried this with the DPN1850PP fixing into the edge of 6mm MDF; although too thin to really expect a nailgun to fire without breakout, I managed to fire consistently with 30mm fixings, and with the ability to set the position so accurately, I was able to get them set perfectly.

On 9mm material the gun allows accuracy and consistency, making thinner stock far easier to fix to an edge; the 'Precision Point' could quite easily be interchanged for 'Perfect Placement, such is the ease in doing so.

I can see this working very well not only for fixing thinner stock, but also edge trim, and it would definitely find a niche for box making with sheet materials to be veneered once assembled.

Great alignment

If you've used standard air-powered guns, there's a different approach to setting these guns on the workpiece. Where you normally press the gun to the work to depress the nose, thus allowing it to fire, on the DeWalts, each gun has a nose that senses it is in contact with the work, thus allowing the trigger to be pulled. This minimises any chance of recoil damage where the gun bounces and the nose makes secondary contact, which can dent and mar the surface.

It works superbly in this area making it very easy to move the tool around the work to set the position accurately and then fire the fixing rather than having to depress the gun down.

Aligning components is an area where this function makes a massive difference as it's always tricky to hold pieces in position while

you also control the gun. With no need to depress the nose on the DeWalt guns, the work can be held far easier when you need to fire a fixing.

Pulling the trigger fully without addressing the work extends the nose and holds it there so that it cannot be pressed against the surface and accidentally fired; it needs to be pulled again to release it so that it can be fired – a neat safety feature as well as aiding more positive placement. This is in its sequential setting where each fixing needs to be completed as a cycle of position on the work: pull the trigger, release and repeat. Put the gun into bump mode by simply rotating the dial – common on all three guns – and the fun starts.

Now, you simply keep the trigger depressed and as soon as it makes contact with the work, it fires. I couldn't make any of the guns fail here; as fast as I could bump them, they fired.

I was setting at least three per second, each one driving consistently and if you need a more rough and ready approach rather than a precise position on some work, this mode will speed things up and then some! There is also adjustment for depth of drive on the guns, set with a dial tucked under the body by the trigger so you can set each fixing to suit the materials being fixed.

Nifty additions

Each gun comes ready to go, complete with a pre-fitted hose connector, which is overlooked on some guns, and each model also comes with a small box of fixings.

The only thing lacking is a set of eyewear protection, which you sometimes see supplied with some guns, so don't forget to get a pair if you don't have any!

The Dewalt nose (right) is miniscule in comparison to a standard-nosed gun

Nails are easy to load; the yellow tab to the right of the nail track indicates if the gun is empty

Each gun has a front access area for dealing with nail jams

Spare soft-nose tips are supplied and stored on board with each gun

Bump and sequential firing is set with this dial

The DPN1564APP gun also has a blower function, which can be operated by pressing this button

Common traits prevalent across the range of guns also includes fast toggle release noses for quick access to jammed fixings, as well as built-in pencil sharpeners – a useful and nifty addition if you happen to be doing a lot of fixings and snap your pencil.

Conclusion

It's always the case that setting fixings into an edge is where many nailguns slip up as the noses are so big, and this is where DeWalt should pick up a big fan base. Their ability to set consistently and with exceptional ease of alignment – whether working finer beads or heavier applications, being able to position and fire with high accuracy every time and with top build quality alongside – makes these guns well worth the money. Oh, and you can keep your pencil sharp at all times too! **GW**

THE GW VERDICT

- **PROS:** Super fine nose for precise setting; no need to push the gun to fire
- **CONS:** No goggles supplied

RATING: 5 **out of 5**

Each gun has its own built-in pencil sharpener!

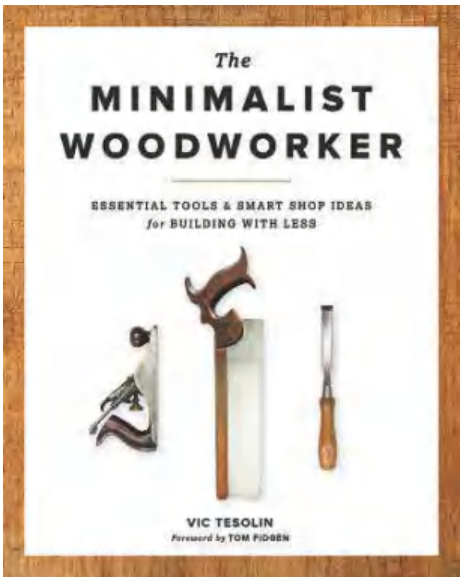
The Precision Point makes it very easy to align on thinner stock

Specification:

- **DPN1850PP**
  Weight: 1.24kg
  Nail diameter: 15 gauge
  Nail length: 15-50mm
  Magazine capacity: 100 nails
  Trigger type: Sequential & bump
  Operating pressure: 4.8-8.3 Bar
- **DPN1664PP**
  Weight: 1.7kg
  Nail diameter: 16 gauge
  Nail length: 25-64mm
  Magazine capacity: 110 nails
  Trigger type: Sequential & bump
  Operating pressure: 4.8-8.3 Bar
- **DPN1564APP**
  Weight: 1.8kg
  Nail diameter: 15 gauge
  Nail length: 32-64mm
  Magazine capacity: 129 nails
  Trigger type: Sequential & bump
  Operating pressure: 4.8-8.3 Bar
- **Typical prices: DPN1850PP** – £160; **DPN1664PP** – £205; **DPN1564APP**: £234
- **Web:** www.dewalt.co.uk

Back to Basics

Get back to the fundamentals of woodworking with this great book from Lee Valley's Vic Tesolin



Anyone who's been to a show in the UK where Lee Valley are represented by their staff from Canada may well have seen the author of this book, Vic Tesolin, demoing their excellent hand tools.

It makes sense then for Vic to put his knowledge from his studies at Rosewood Studios in Canada, along with his demo skills from shows, to good use and pass on his knowledge in this book.

Hints & tips

It's not quite *The Anarchist's Tool Chest* designed for the dyed-in-the-wool Luddite, but more for the novice looking for hints and tips on hand tool work with minimal space and resources.

That's what sets it apart from most books from across the pond, and it's refreshing to read the opening chapter whereby it dismisses the need for a huge cavernous workshop and a raft of kit, and in most North American books, or indeed their woodworking magazines and TV shows, the workshops and gear they have within them are usually immense!

The minimalist title therefore focuses on two areas: minimal tools as well as minimal space – definitely better suited to many British home woodworkers!

Clean layout

The clean layout of the book follows the minimal theme with superb clear photography and simple, clear and concise explanations and instructions throughout. The front end, after the intro from Tom Fidgen, concentrates on the core woodworking hand tools, what they do and the selection process to get you started, so for a more adept woodworker, 'teaching granny' but everyone has to start somewhere, and this book is focused more towards this area.

The actual projects are designed for the woodworker starting from scratch with a simple bench, trestle and storage shelf projects covered, all made using hand tools.

Alongside is a nice little shooting board that doubles up as a bench hook, each simple enough, but very well explained and with some nice little tips that will stay with you no matter how far down the line you progress.

Vic certainly knows the value of using your stock as your dimensioning tool when marking out, eliminating the need for rules or tapes and the subsequent errors that can manifest. This alone is a tip that should be put to good use whenever possible, no matter what the project, as it helps eliminate measuring errors from tapes or rules.

Conclusion

All in all, while not an intensive tome to glean deep, engrossing information, it works very well in explaining the basics while offering little nuggets of advice and techniques that become a theme throughout. I guess if I had to alter anything within the recommended kit, I'd perhaps dispense with the sweep brace in favour of, or alongside, a battery drill! **GW**

Further info

Author: Vic Tesolin
Published by: Spring House Press
ISBN: 978-1940611358
Typical price: £17.20 (From www.amazon.co.uk)

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A hard-working duo

Although Makita may have missed a trick with this duo not being compatible with an 18V charger, this combi drill and impact driver work hard and are built to last

With the huge range of tools available across the board, its little wonder that the 18V platform takes the centre stage with Makita. They have constantly proved their worth for power, durability and with ever increasing Amp Hours, battery longevity.

Power tool revolution

Alongside, the 10.8V platform has been quietly ticking along in the background, but has been limited to quite paltry Amp Hour times, mostly down to the design of the batteries themselves.

There has been a small revolution going on, though, and the most popular drill and impact driver combination set has had a makeover and now comes with 2Ah as standard. In doing so, it has meant a redesign, so the original cloverleaf-style spigot batteries are now dropped in favour of a new slide-on pack, the additional benefit being a 4Ah version is also available so you can quite easily get a full day's work from a single charge for simple small assembly tasks. As well as this, with the battery having a large square base, the tools can now be stood up for easy access as you work.

Missing a trick

There are two downsides, however: the batteries won't fit any of the older 10.8V kit, which is to be expected with a redesign and new battery style, but, more importantly, Makita have missed a trick by not making the batteries compatible with the 18V Li-ion chargers. It does mean that if you work with tools from both voltages, you need to carry an additional charger, which is frustrating when the battery has been redesigned to the same slide-on style.

However, it is good to see that at long last, Makita have introduced a battery power indicator on these 10.8V versions, a feature sadly lacking on the 18V versions. It's a very useful function allowing a quick press to see how much juice is in the tank before you climb that ladder, pack the kit ready for a job with no ready power to charge a depleted battery, or begin a complex glue and screw assembly job and so forth. It's certainly a feature that I hope will find its way onto the 18V batteries at some stage.

Tools in use

With its 110Nm torque the impact driver is punchy and capable enough to drive 90 × 5mm screws, a capacity I checked with a few test drives into softwood without piloting, each screw driving home speedily and without over-straining the tool.

The combi function drill is a worthy sidekick to the impact driver, with the hammer function being especially useful for smaller holes in masonry in softer blocks. Standard 7Nm construction blocks are no problem here, and with an 8mm capacity in masonry, anyone doing smaller installations, such as fixtures in bathrooms and the like, will find it very handy although denser concrete lintels may prove more of a task. In general use, however, it makes itself at home for occasional masonry drilling jobs.

21mm is its timber capacity, and it needs to be in its lowest gear for bigger work, but it seemed at home with a 25mm Forstner in softwood as well, although I wouldn't recommend going beyond its design limits.

As with most combi drill and impact sets, there's little to enthuse about in terms of features and attributes as they are basic workhorses, and much the same here. However, the use of the double collar system found on the bigger combis is carried over to the combi drill, and very welcome too as it allows the drill to be set in a low torque position for screwdriving and simply altering the second collar to gain full torque power for drilling work while the torque collar remains set. It does make the drill slightly longer to account for the collar, but I'd take that over a single multifunction torque collar any day.

Both the drill and the impact also have good variable-speed triggers to control them when you need that extra bit of finesse, especially useful for smaller length and diameter screws where the impact at full tilt would drive them in too readily. The drill also has a two-speed top slider operated gearbox, the lower gear again allowing more control while also increasing the torque level for bigger diameter drilling jobs. Each machine also has a single small LED that illuminates towards the chuck area as the triggers are engaged.

Conclusion

For me, it's the power these smaller machines now generate that make them such a boon, which is on a par with 18V machines in the early days of NiCd and NiMh machines and for smaller work such as kitchen fitting, assembling flat-pack furniture, etc. are all perfect applications.

The low weight and extended battery life afforded by the 2Ah standard supplied units alongside the 4Ah option means you can use them all day without fatigue a well as not losing out on downtime from flat batteries.

I used this particular set for the pallet chair project in *GW*304 and they were very light and easy to handle and with great balance – it was a doddle to get everything drilled and fastened and with loads of power in reserve.

I guess my only reservation is that I've been spoilt by Makita's ultra-fast chargers supplied as standard with the 18V machines, and this set has a slower charger supplied as standard although there is a nippier one available if you feel the need for it. Other than that, Makita have introduced a set that has good specs and build quality, which puts in a great shift when you need it. **GW**

The new 10.8V batteries now feature charge status indicators

Dual collars on the drill make it simple to swap between drilling and torque driving

A single trigger operated LED is a handy feature on both tools

Checking the power, the driver was able to drill 25mm holes with a Forstner...

... while the impact driver made 90mm screws bump into softwood with ease

The set is ideal for smaller work, such as the pallet chair project featured in *GW*304

Specification:

- **HP331DZ combi drill**
  Max diameter steel: 10mm
  Max diameter timber: 21mm
  Max diameter masonry: 8mm
  Chuck capacity: 10mm
  Speeds: 0-450; 0-1,700rpm
- **TD110DZ impact driver**
  Max torque: 110Nm
  Speeds: 0-2,600rpm
  Impacts: 0-3,500ipm
  Max coarse thread screw: 90mm

Both tools feature slide-type Li-ion batteries, variable-speed control triggers, LED job lights and are equipped with a battery protection circuit

- **Typical price:** £170
- **Web:** www.makitauk.com

THE GW VERDICT

- **PROS:**
  Battery status indicators; dual collar on drill; masonry function; good variable-speed triggers
- **CONS:**
  Not compatible with 18V charger; charger isn't the quickest available

RATING: 4 **out of 5**

A revolution in hollowing

Although designed for the hollowing of smaller hollow forms, goblets and boxes, this tool from Crown is also ideal for regular turning

My experimenting in woodturning continues and this time around I've been looking at hollow form turning where the inside of a piece is hollowed out through a small aperture. It looks to be pretty specialist and one for the more advanced turner, but in for a penny as they say...

Solidly built

The Mini Revolution tool is solidly built with a link-ended tool holder that allows it to be altered to gain access to areas unobtainable with standard tools, with each link held securely with a hex screw. The cutter is a cryogenically treated ring with a brass top collar that acts as a restrictor to limit the cutting depth.

It is offset so that by rotating it, the amount of cutter projection can be altered for heavier or finer skimming cuts. There's also a scraper blade supplied with the tool, again cryogenically treated for finer finishing if needed.

With the linkage needing to extend beyond the toolrest there's a lot of cantilever involved so the thick shaft helps keep chatter down, as well as the black lacquered ash handle doing its bit alongside.

Online instruction

I found the supplied instructions pretty woolly, however; I adjusted the ring to take the finest cut possible to ease my way in, but on addressing the work from my interpretation of the instruction leaflet, presenting the tool to the work at the angles indicated, the tool was jumping around, snatching and twisting no matter how hard I held it. I persevered but was getting nowhere, so I was beginning to think that I was out of my depth with this particular tool and it was more for the experts, but we live in enlightened times and Google is your friend!

A quick search gave listings of YouTube videos and an excellent one by Mark Sanger showed all the info I needed to go back to the lathe and try again. To say it was a Eureka moment would be an understatement! All of a sudden, by simply altering the toolrest position slightly, the angle of the tool as it addresses the work and the way in which the tool moves, I was cutting away merrily with ribbons of shavings ejecting just like in the video!

Experimentation

My problem was down to trying to work the tool in the same way as a standard cutter, pushing in on the tool to get the cut. With the Crown, I found the lightest of touches enough to attain a sweet cutting tool.

Being able to cut on a push or pull also gave me more diversity; the speed in which a bowl can be hollowed is amazing, and once the control is mastered, the finish direct from the Super Ring cutter is superb.

It's not just for hollowing blind, however; watching the videos and putting it into practice I was able to shape convex and concave shapes with ease; it's all about a light touch against the work but with a firm grip on the tool as it bites, along with a combination of either pushing or pulling while pivoting on the toolrest.

It still needs plenty of concentration to get things going, though, and I found that working towards the outer edge of a wider bowl, where there's more torque, meant more strain on the tool and the tendency for it to try and twist in my grasp.

Different timbers and diameters make life all the more interesting as well, and it is a combination of experimentation as well as a learning curve to get the tool to address the work correctly so you can achieve clean shavings without it grabbing and chattering, but I'm enjoying the ride at the moment!

Conclusion

If you want to move on a little from standard turning and the techniques associated, then this is definitely an area to explore, and this tool is ideal for small- to medium-sized projects.

It does pay to get plenty of practise under your belt before moving on to a finished project, but I found perseverance begins to pay off in a short space of time. **GW**

I found addressing the tool too close to horizontal made it drag and catch excessively

Altering the angle of attack allowed me to make controlled cuts

Experimenting on this piece of maple I was soon able to grasp the basics

The tool is equally at home making standard bowl cuts such as the one shown here

The finish direct from the Super Ring was excellent on this maple blank

Wasting the inside of this bowl was equally easy once I mastered the cutting angles

Specification:

- **Overall length:** 430mm
- **Handle length:** 250mm
- **Supplied with:** Super Ring and scraper cutters, produced from cryogenically treated steel for excellent edge retention
- **Typical price:** £47.95
- **Web:** www.axminster.co.uk

THE GW VERDICT

- **PROS:** Leaves an excellent finish; not just for hollowing work
- **CONS:** Takes a while to control; can twist in the hand if not gripped firmly
- **RATING:** 4.5 **out of 5**

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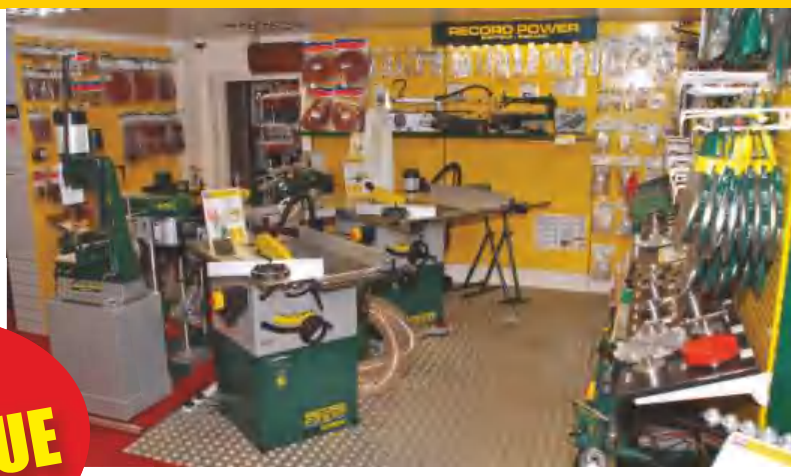

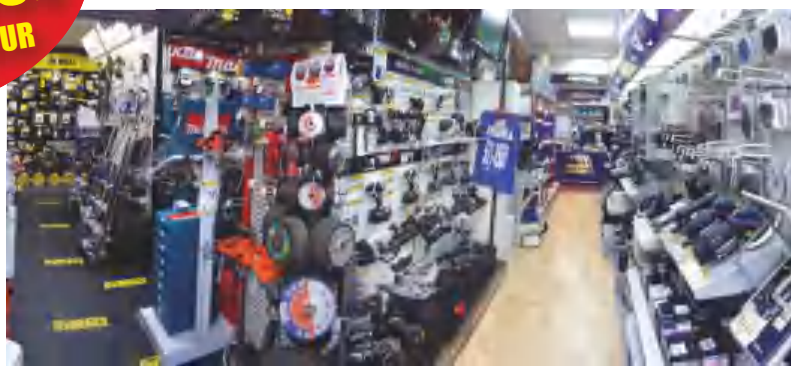

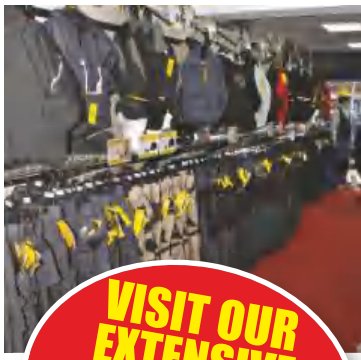

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Carving with Mark Doolittle

Fine woodworking artist **Mark Doolittle** shares the tips and techniques he uses to create his intricate carvings. According to Mark, the secret to success is 'continuous refinement'

The most frequent question I am asked at art shows is "how do you do it?" most thinking that there must be a magical technique that I have invented, or specialised tools I have fashioned in order to create my intricate carvings. Most think I use lasers, or sandblasting tools, or 'wood-eating' chemicals or insects, to name a few. However, the simple answer is that I use standard carving tools, both rotary and hand-held, and use them in a very orthodox manner. My 'secret' technique is my imagination, not so much the process. Carving is like sculpting: you must first imagine in your mind the features you wish to create, and continuously appraise these features during their sculpting. This takes practice and patience, and the appreciation of positive and negative space. Indeed, the actual removing of material can be done in a variety of ways, using hand-held tools or rotary burrs. Once you understand the shapes you are trying to create, it becomes pretty obvious which tools work best.

Continuous refinement

From a technical standpoint, I can summarise my carving approach as 'continuous refinement'. I can summarise this approach in three basic steps: **a)** roughing out the basic features of the carving; **b)** refining shapes and details; and finally **c)** clean-up. In roughing out, the aim is to obtain the basic geometry and general shapes of the carving. At this stage, do not be concerned about carving detail; however, leave behind enough material where detail features will emerge. Use bits and burrs that remove wood efficiently, such as Typhoon and DuraGrit burrs, sleeves, discs and wheels. Also, hand-held gouges, rasps, rifflers, files and abrasives are important tools at this point in the carving process.

Shapes & details

The next stage is refining shapes and details. The objective here is to achieve details of the carving, accomplished by repeatedly removing small amounts of material until the desired shape is achieved. Multiple passes using finer and finer burrs and bits characterise this refinement phase, so that less and less material is removed at each >

The process

From plan to finished piece

This is a two-image compilation of the piece 'Anemone'. The top photo shows the piece after woodturning and partial carving; the bottom photo shows the finished piece. 'Anemone' is made using Ambrosia maple and measures 100mm high × 330mm wide × 330mm in diameter

The photo above shows an area of the piece 'Ancient Tide Pools' magnified to show details of the carving and inlay of the fossil ammonites; the right-hand photo of the entire piece is shown with lines to identify the area that is magnified. The piece is carved from Afzelia burl and features 15 inset fossil ammonites. The sculpture rests on a patina copper sheet within a maple/bubinga frame

TO FIND OUT MORE ABOUT MARK, SEE OUR PROFILE ON PAGE 58

subsequent pass. Along with bits with a machined cutter head, I also use diamond and carbide bits of various grits, as these remove small amounts of wood. As always, fine hand-held files, gouges and abrasive wrapped around small sanding blocks of appropriate sizes and shapes are also useful.

Clean-up

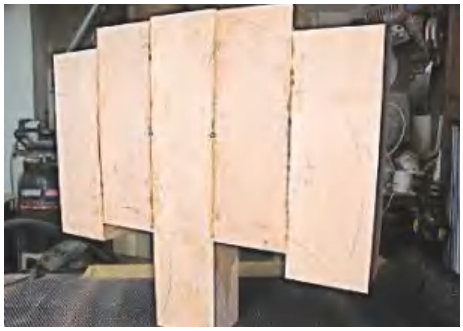
The final 'clean-up' phase is really a continuation of the refinement phase, where the objective is to remove (as much as possible) unsightly tool marks, sharp edges and protruding fibres. Use abrasives for accessible areas, and diamond and carbide bits to clean up deeper, hard-to-reach spots. When using diamond and carbide bits, spin them very slowly and apply them with a very soft touch; this reduces the creation of tool marks and makes the tool act more like abrasives.

Appraising shapes & structures

The approach of 'continuous refinement' (i.e. the removal of small amounts of wood during multiple passes) allows the artist to continuously appraise shapes and structures as they are being created, while providing the control necessary to achieve very detailed carvings. It also prevents a cardinal sin of carving: trying to remove too much wood during a single pass, by either pressing the tool into the wood too hard or spinning the bit too fast. By applying this approach, you can avoid another very frequently asked question of mine: "Don't you slip and break these fine little features during carving?" No, because the approach of continuous refinement provides the necessary control.

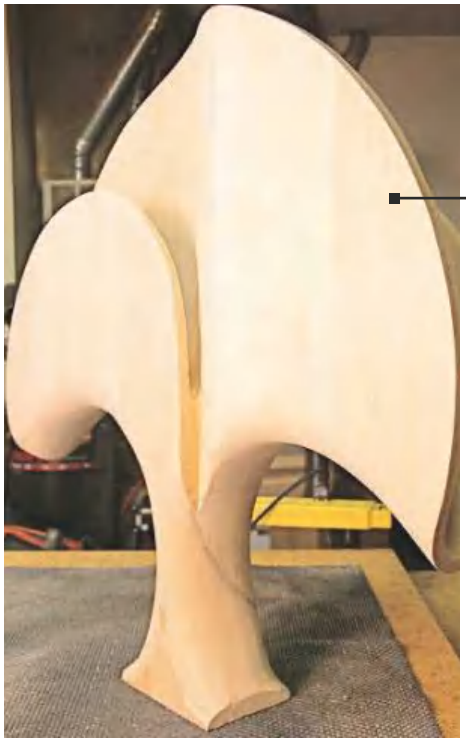
'Coral' in progress

This series of in-process photos shows how I create a piece from gluing up multiple planks of wood to create a large 'canvas' to shape and carve. Here, the design takes precedence over the wood, and I use wood that has neutral colours and small, even grain. This process is much different when I use highly figured woods, where the precedence is the wood and the design is carefully chosen to bring out the nature of the wood (see 'Reef' in progress on page 28). >



STEP 1. This is an image of five blocks of wood (basswood, North America), each about 100mm wide × 100mm-thick (and of varying heights), that were glued together to create the 'canvas' for the piece called 'Coral'

STEP 2. After the glue-up, I used a bandsaw to cut out the basic shape of 'Coral'



STEP 3. After the cut-out, I shaped the piece with large rotating burrs, hand-held rasps, files and abrasives to obtain the curves and hollows. The inset photo to the right shows a different profile of the shaped piece

STEP 4. After shaping, the detail carving begins using small rotating bits and burrs

STEP 5. The detail carving had to form a continuum across all faces and sides of this particular piece. This image shows how I created the transition between faces and sides

STEP 6. This photo shows the piece when about half of the detail carving had been completed

STEP 7. All carving is now completed

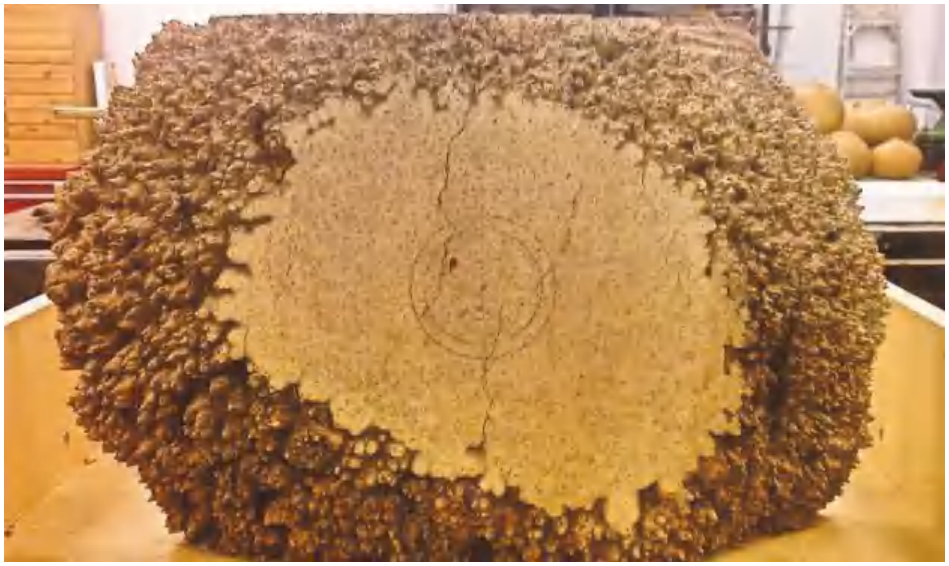
FURTHER INFO

To find out more about Mark's processes and techniques, and to see more examples of his wonderful pieces, visit his website: **www.markdoolittlestudio.com**

STEP 8. After completing the carving, I used an airbrush to apply wood stains to the edges of the piece to provide colour and to emphasise its lines. After staining, about six coats of finish (polyurethane) were applied, sanding between each coat. I used a final rubbing with '0000' steel wool to obtain a satin (low-gloss) finish

'Reef' in progress

This series of in-process photos shows how I create a piece from a single piece of burl wood, where I am very careful when designing the piece to take into account the colour and grain patterns inherent in the wood. **GW**



STEP 1. These two images show the burl slab I used to create the piece 'Reef.' The left-hand photo shows me holding the slab, backside out, to give you an idea of size; and the right-hand photo shows the front of the piece with pencilled circles locating the centre of the piece. The wood is Amboyna burl from Southeast Asia, with its distinctive golden-coloured sapwood and red-coloured heartwood. The pin-like extrusions covering the surface of the sapwood (see right-hand photo) creates what is called the 'live-edge', and is typical of the surfaces of most burls. The shape of this burl is as I received it from the mill; at this point, I had not touched the wood

STEP 2. I used large hand-held gouges and rotating burrs to rough-out the front of 'Reef', creating a cone-like face. The right-hand photo shows the result of using hand-held rasps, files and abrasives to smooth out the cone to its final shape

STEP 3. The photos above and top right show the beginning of the detail carving, where I used small spherical burrs and bits to create an intertwined network of tubes that are reminiscent of corals. The bottom right-hand photo shows how I finished the backside, creating an inverse cone that matched the profile of the front

STEP 4. Once the carving of 'Reef' was completed, the piece was placed in a stand carved from Claro walnut (Oregon). For 'Reef', I applied multiple coats of Shellac, and buffed it out to a medium lustre. Shellac brings out the colour of the wood, particularly the rich reds of the heartwood. The photos here show the front and back of the piece, respectively

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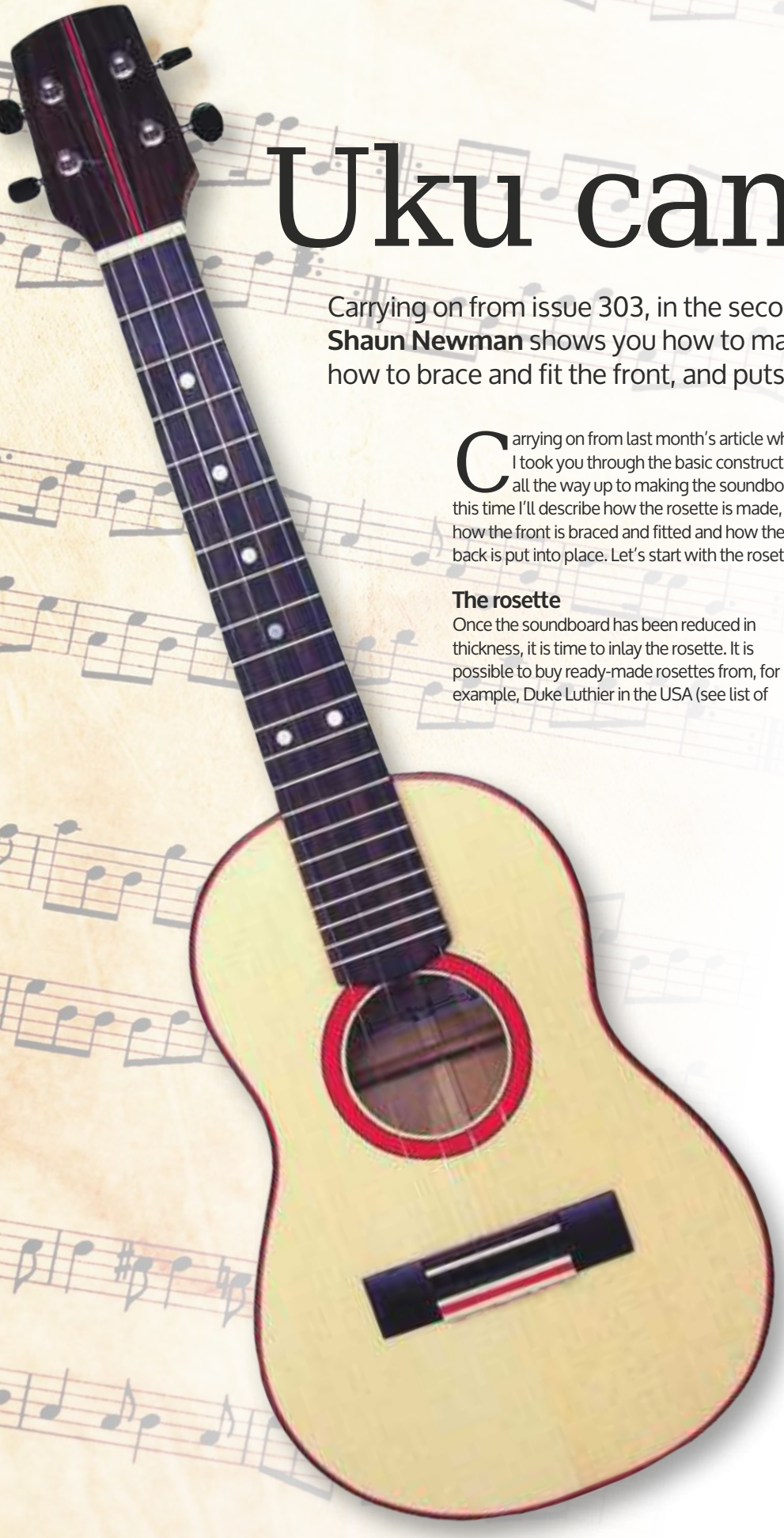


Uku can do it!

Carrying on from issue 303, in the second part of this series, **Shaun Newman** shows you how to make the ukulele's rosette, how to brace and fit the front, and puts the back into place

Carrying on from last month's article where I took you through the basic construction all the way up to making the soundboard, this time I'll describe how the rosette is made, how the front is braced and fitted and how the back is put into place. Let's start with the rosette.

The rosette

Once the soundboard has been reduced in thickness, it is time to inlay the rosette. It is possible to buy ready-made rosettes from, for example, Duke Luthier in the USA (see list of suppliers at the end of the article). However, by using thin strips of coloured veneers, it is easily possible to make your own. The position of the rosette is marked out onto the spruce in relation to the rest of the front (**Pic.1**). The next task is to cut a channel around the centre of the soundhole around 8mm wide and 1.5mm deep, 35mm from the centre. This is best done with a Dremel mini router with a trammelling base (**Pic.2**). However, an ordinary router can be used with a homemade base that allows circles to be cut. When the channel is ready, thin strips of veneer are prepared

STEP 1. The soundboard dimensions and rosette marked out

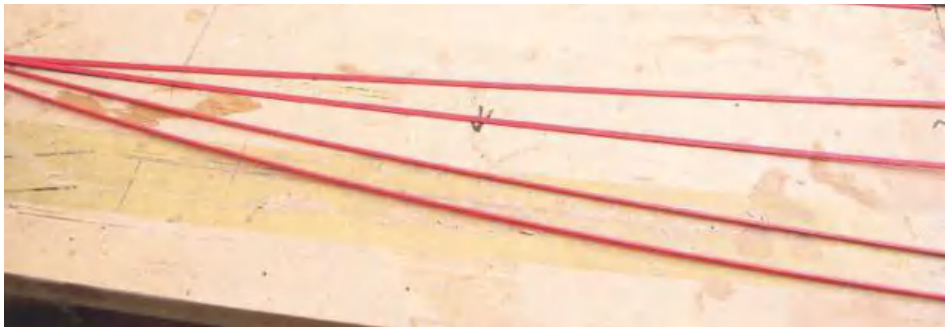
STEP 2. Cutting the rosette channel with the aid of a mini router

with a scalpel each at around 2mm wide (**Pic.3**). These can be bent on the hot iron (**Pic.4**) and placed into the channel or simply pushed in one by one (**Pic.5**). I normally start and finish with a black to offer good contrast against the spruce. If you work from the outermost strip towards the centre the veneers will try to push outwards, tightening themselves naturally as you build the rosette up. The last strip may need to be tapped in with a rubber-headed hammer to make sure everything fits tightly.

Once all of the strips of veneer are in place, the whole rosette is steeped in 'Zap-A-Gap Pink' CA adhesive, which is the best for this job as it is very thin and runs into all of the tiny gaps and holds the veneers in place. Once cured, the rosette can be levelled with a chisel (**Pic.6**) or small plane and finished with 320 grit abrasive. The soundhole itself can now be cut out with the router (**Pic.7**) or a fret saw leaving an edge of around 2mm-wide. As the rosette has been let into a channel 1.5mm deep and the spruce soundboard is just 2mm-thick, there is an area of weakness here which must be strengthened. A patch of 0.8mm model maker's plywood is attached to the inside of the board to strengthen that area (**Pic.8**).

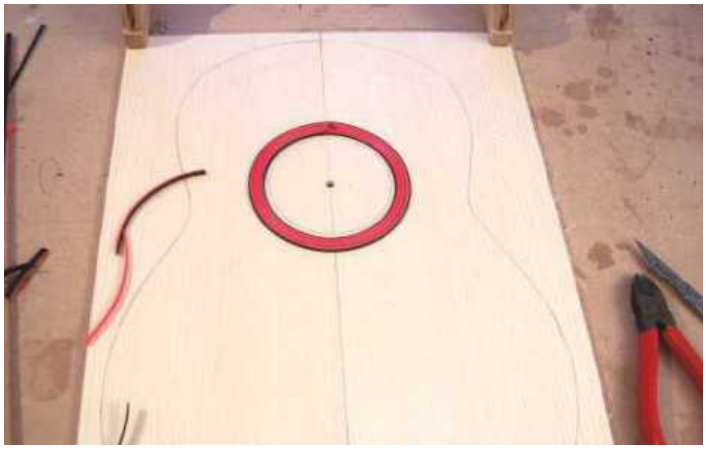
Bracing & fitting the soundboard

If a 2mm soundboard were fitted with no bracing to strengthen it, disaster would soon follow. The braces help to distribute sound and offer stiffness >



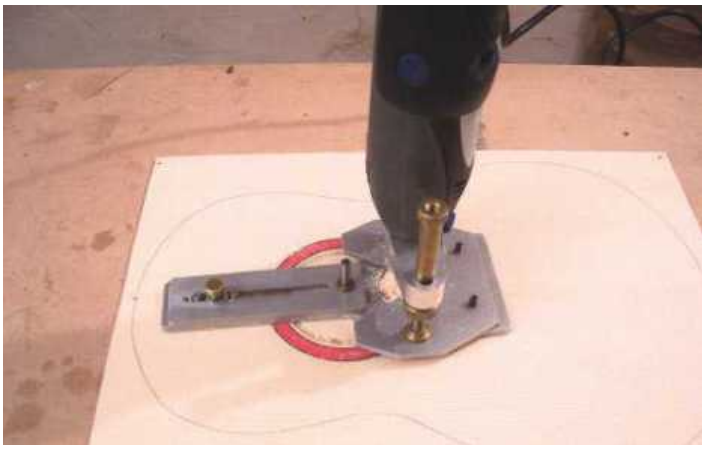
STEP 3. Veneer strips are prepared for the rosette

STEP 4. Bending the veneer strips on the hot iron

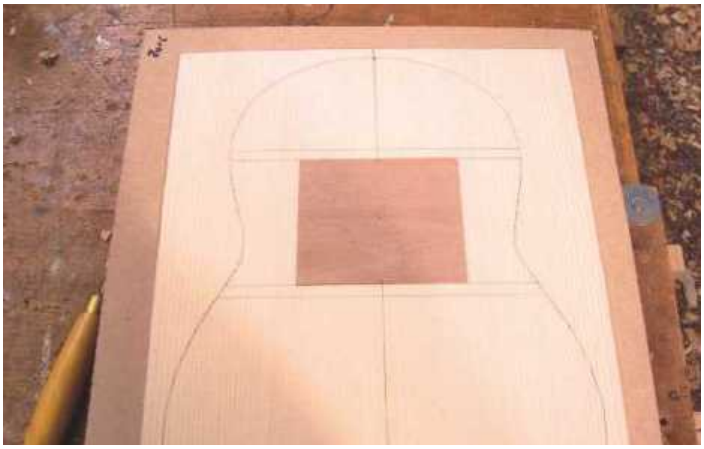


STEP 5. The strips are inlaid into the channel

STEP 6. Levelling the rosette with a paring chisel



STEP 7. Removing waste wood from the soundhole



STEP 8. The support patch for the rosette

STEP 9. Clamping the fan bracing

STEP 10. Clamping the harmonic bars

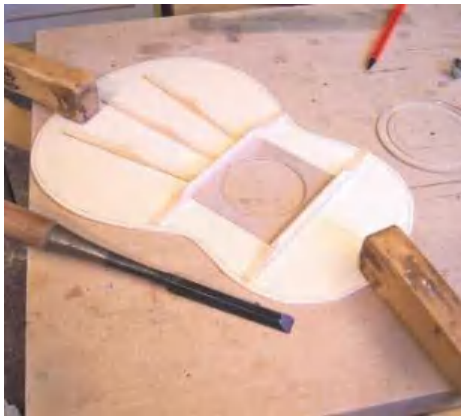
STEP 11. Scalloping the fan braces

STEP 12. Scalloping the harmonic bars

STEP 13. Gabling the harmonic bars

STEP 14. Cutting the front to shape

STEP 15. Marking the ends of the harmonic bars



STEP 16. Trimming the ends of the harmonic bars

STEP 17. Fitting the front of the ukulele

and strength to the front such that the stresses created by the strings as the instrument is tuned are counteracted. Each brace is made from fine-grained spruce and there are five altogether. The two that run horizontally are the harmonic bars and are made to a depth of 12mm and a width of 6mm. The grain should run down through the depth. The three fan braces are cut to a depth of 10mm and a width of 5mm. Once they are all cramped into place (**Pics.9 & 10**) the ends are scalloped with a parabolic curve (**Pic.11**). At the ends of the harmonic bars the height should be brought down to around 3mm (**Pic.12**). The harmonic bars are gabled once the ends have been scalloped; this helps to reduce their bulk and to improve sound quality (**Pic.13**). The steel ruler is placed along the side of the bar to protect the soft spruce during the process.

Once braced, the soundboard can now be cut to shape and fitted. It is cut out slightly oversize (**Pic.14**) and will initially overlap the sides when put into place. The neck and sides are removed from the mould and the front is placed face down onto its base. The front should be held in line with a small propeller-like clamp screwed into the base of the mould so that it does not move when the sides are pushed back in. Once they are sitting over the soundboard, the exact spot where the sides meet the harmonic bars can be marked with a pencil (**Pic.15**). The ends of the harmonic bars then need to be trimmed to allow the sides to sit flush onto the inside of the soundboard when it is placed into the mould (**Pic.16**). Once this has been achieved the tailblock and fingerboard end of the heel are coated in glue and held down onto the front with cam clamps (**Pic.17**), then the inside edges of the front can be secured using 'tentellones'; these are small triangular pieces of spruce 7mm high and 4mm wide (**Pic.18**) and are placed into the point where the sides meet the soundboard and held in place with Titebond glue. A long pair of tweezers does a good job and once the tentellone is in place, it can be pushed home with the end of a pencil that has an eraser attached.

To prevent the harmonic bars from pinging off they are held in place with taller tentellones (i.e. 45mm long) (**Pic.19**), which need to be clamped while the Titebond cures (**Pic.20**). These also help with sound distribution.

Preparing & fitting the back

The back is made in a similar fashion to the front. The two bookmatched halves are planed flat along the inside edge (**Pic.21**), squared and put into the gluing jig. This time red and black veneer

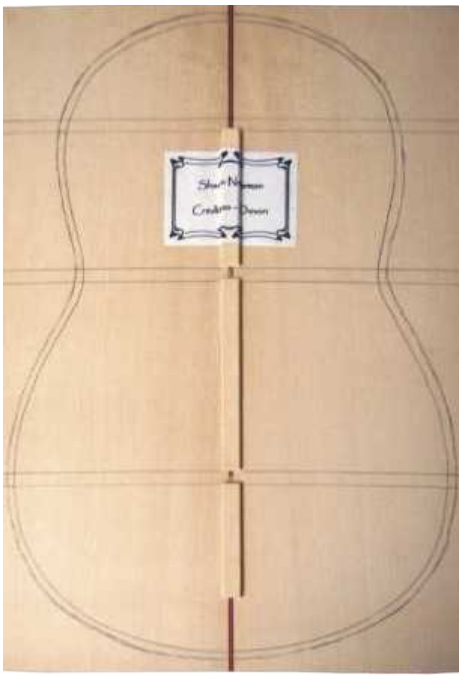
STEP 18. 'Tentellones'


STEP 19. Extra-long tentellones


STEP 20. Clamping the long tentellones


STEP 21. Planing the inside edges of the maple back while clamped in the vice


STEP 22. The cross-banding to strengthen the join in the back


STEP 23. The label in place

strips are sandwiched between the two boards to form a decorative back strip. Once the glue is dry, the back can be reduced in thickness to 2mm all over. With the veneer strips running through the centre the join between the two halves of the back can be very fragile, so a thin piece of cross-banded spruce is laid along the centre and glued in place. This strip is usually around 12mm wide and 1.5mm thick, but may be wider if several veneers are used to make up the decorative centrepiece.

In preparation for fitting the back, slots are cut through the cross-banding to allow the braces to make contact right across the inside (**Pic.22**). Now the label can be glued in. There are many images of borders available online, which can be used to create a label such as the one here (**Pic.23**).

The next task is to make the back braces themselves. There are three in all each made from mahogany and 12mm deep and 6mm wide. These braces have to be curved slightly to offer a gentle profile to the back of the ukulele. The overall 'lift' on the back is around 3mm; this can be achieved by making a template and transferring the curve to a sanding stick. The braces can be roughly planed to the curve (**Pic.24**), and then the edges that will be attached to the back can be profiled on the curved sanding stick to get an even shape on all three (**Pic.25**).

These braces are clamped onto the back and as with the harmonic bars, they are scalloped at the ends (**Pic.26**) and gabled. The ends of the braces are reduced to 3mm. As with the front, a steel ruler is placed against the brace so that the block plane does not damage the back or >


STEP 24. Planing the curve onto the back braces


STEP 25. Sanding the curve to give a 3mm lift


STEP 26. Scalloping the back braces

STEP 27. Gabling the back braces

STEP 28. Trimming the sides with a thumb plane

STEP 29. Sanding the 3mm lift

STEP 30. Checking the curvature

STEP 31. Ensuring opposite sides are equal height

STEP 32. Clamping the kerfed lining into place

STEP 33. Cutting the back to shape

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the soft spruce of the cross-banding while the gabling takes place (**Pic.27**).

Before the back can be fitted the sides, heel and tailblock have to be prepared. The 3mm lift must be applied here also. This is done by using a small thumb (**Pic.28**) or block plane followed by the curved sanding stick (**Pic.29**) and monitored by a simple cross-shaped jig, which has a cross-halving joint at its centre that is not glued. The longer part of the jig lies over the heel and tail, and the crossbar runs backwards and forwards enabling the exactness of the curvature on the sides to be checked (**Pic.30**). Throughout the process it is necessary to check that opposite sides are the same height all along (**Pic.31**).

Once the sides are prepared, a kerfed lining should be glued into place along the top inside edge to support the back. The lining is held in place with a number of mini clamps, which I bought from Poundland; around 50 are needed (**Pic.32**). The kerfed lining must be sanded flush with the top edges of the sides. Once the back has been cut to size – by around 5mm too large all round (**Pic.33**) – it is then placed over the sides with the scalloped braces overlapping. A small slot should be cut exactly where the braces stand out over the sides so that the back itself can lie flush (**Pic.34**). Once this has been achieved the back can be glued on (**Pic.35**). If the large number of cam clamps is not available, it is possible to hold the back down with large elastic bands while the glue sets (**Pic.36**). Some makers use linen strips to tie the back into place, but elastic bands do a very good job and apply considerable pressure.

Bindings & purflings

The bindings are there to protect the edges of the ukulele. This is particularly important for the front as the spruce is very soft and can easily be damaged. The purflings are there for decoration and lie between the bindings and the outer edges of the back and front. They are not essential but do add considerably to the overall appearance. Before both can be fitted, the top and back need to be trimmed flush to the sides; this can be done with a flush cutting router bit or a sanding stick. Channels must be cut around the edges of the instrument at 5mm deep and 2mm wide for the

STEP 34. Locating the correct position for the back of the instrument

STEP 35. Clamping the back in place

STEP 36. Elastic bands hold the back in place

STEP 37. Cutting the binding and purfling channels

STEP 38. Chiselling the slots

STEP 39. Using parcel tape, as shown, helps to ensure a tight grip

STEP 40. The bindings and purflings held in place with masking tape

STEP 41. Trimming the bindings flush

STEP 42. Fitting the heel cap

bindings and 3mm deep and 1.5mm wide for the purflings (**Pic.37**). The purflings are made from strips of coloured veneer in a similar way to the tailblock and headstock inlays.

The bindings are rosewood and are bent into shape on the hot iron. This is a tricky job as they break very easily if too much pressure is put on them during the bending operation. I find that a strip of flexible stainless steel held directly behind the binding helps to prevent breakages during the process.

When the bindings are bent to shape and cut to length, slots must be cut into the neck and heel to allow them to be put into place neatly (**Pic.38**). The slots in the neck will be covered by the fingerboard so can be cut roughly to length, but the ones into the heel must be pretty much exact. If the bindings and/or purfling do not quite meet at the heel, then the heel cap can be cut in such a way as to hide the join.

The bindings and purflings are glued along the inside edges and held firmly in place by strong masking tape. To help the masking tape to grip tightly, I put strips of parcel tape around the sides of the ukulele and over the top and back (**Pics.39 & 40**). This is easily removed once the glue has dried but care must be taken with the front as the spruce can easily tear. As the binding channels were cut to a depth of 5mm and the bindings are supplied at 6mm deep, the top edge should be trimmed flush. I use a small thumb plane for this job (**Pic.41**), but a flat sanding stick with 120 grit abrasive can just as easily do the job. If coloured purflings are put in, some of the colour will get into the grain of the spruce; this can be removed as the front is sanded with finer and finer grit paper. By the time 400 grit is used, the spruce will be clean.

Next comes the heel cap, which is made from a small piece of rosewood 2mm-thick. It is clamped on first having been cut roughly to shape and then is trimmed to the correct profile once the Titebond has dried (**Pic.42**).

That's it for now – join me again in *GW*307 where we'll complete the build. **GW**

NEXT TIME

In issue 307, Shaun will describe how to fit the frets, prepare and attach the fingerboard and fit the tuners and the bridge. He will also look at how to make the bone nut and saddle, how to apply a good finish and, finally, how to string up and tune your finished instrument!

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Only one entry per person; multiple entries will be discarded. Employees of MyTime Media Ltd and Easy Innovations are not eligible to enter this competition

Chime offensive

Edward Hopkins entangles himself with the mathematics of music, and extricates himself from a dubious commission

If you're going to make a musical instrument, it might as well be in tune with all others. Middle C is apparently defined as vibrating at 261.625565 hertz, which is very useful if you have a hertz meter. On a humbler level, you might have a tuning fork, or perhaps you have a keyboard. What you can't do is be really clever and go on YouTube where 'hear piano note middle C' is freely available, because the comments range from '10 cents flat'; '30 cents flat'; 'at least 99 dollars flat' to 'hahahaha' and 'that was genuinely upsetting'.

Tubular bells

Years ago I called on a friend and neighbour, Mike Evans, a consummate violinist and occasional piano tuner. I reckoned that 22mm copper pipe would serve as tubular bells, but I didn't know where to begin. We spent a couple of evenings; me on a tube cutter and sanding wheel (**Pics.1 & 3**); him all ears to the ether uttering 'a touch more' and 'ah! too much'. I ended up with a two octave set including semitones but they've stayed in a box until now. I did make several sets of eight note doe-ray-me tubular bells and hung them from little oak brackets but that's as far as I took it. Now I'm going to finish what I started but oh, what a surprise, it isn't that straightforward! I lined up all 27 pipes, but (with all respect to Mike) their increments did not look entirely even. I'll say straight away that if you're not interested in mathematics or epistemology (which is the study of knowledge, not of comedians) you can skip the next bit and go straight to the table of numbers (see page 39). I include it because it has given me a touch of brain ache, and if I have to suffer, I don't see why you shouldn't suffer too.

I took Mike's measurements and plotted >

PIC 1. It worried me that the tube cutter rounded over the end of the pipe, which presumably would affect its clarity of tone. I tried being gentler with it, and I tried the cutter on the left but there wasn't much to choose between them. This does demonstrate, however, that if the bells were to be made of higher grade alloy, more attention would have to be paid to the method of cutting

PIC 2. Tubes cut, drilled and fitted with grommets. It then occurred to me that for playability, the 'black notes' had to be positioned within reach of the 'white notes' just as they are on a piano. This gave rise to a sloping top rack. I had initially thought of making the set floor standing but that would have been a large construction and unwieldy if it were to be moved around. Rather, I made my bracket to screw to the wall

PIC 3. Sanding away to sharpen the tone. The thin strip of wood under the tube was so that the grommets wouldn't alter the angle of cut. Always beware of grommets

PIC 4. A simple beech frame, screwed together. The stringing can obviously be neater. I don't think these bells are the final edition!

them on a graph. The curve was not entirely smooth. I measured the intervals between each tube and plotted that. Were the intervals to be consistent, I'd have expected a smooth curve, but this was a zig-zag. I evened out the zig-zag with a smoothish line (remembering that 0.5mm was my minimum increment so the line was necessarily stepped). Then I imposed this fresh line on Mike's figures, moving them very slightly up and down until a good compromise was reached.

I used the resulting figures and cut, drilled, fitted grommets (**Pic.2**) and strung the tubes accordingly. The bells are just over two octaves, running from G below middle C to top A. In the lower middle section of this, the eight note scale of C major sounds fine, and so do its sharps and flats. Below that is good, too. In fact, all of tubes 1 to 20 seem OK. There is, to be sure, some minor inaccuracy of tone but none large enough to be painful. E above Middle C is within a whisker of my tuning fork. The last seven tubes were, however, decidedly flat. This was another disappointment, but on the up side, they were flat, not sharp, meaning that I could tune them up by grinding down an end. So that's what I've just been doing, and now none of them hurts.

The measurements, of course, have gone awry. I have repeated my method, plotting the new tube lengths on a graph (see page 41); plotting their intervals; regularising their intervals consistent with not deviating too much from the line, and redrawing it.

An excursion into mathematics

In the graph, Series 1 represents the tubes as I now have them strung and playable. Series 2 is their intervals multiplied by 10 so as to show up clearly. The irregularity of the line shows that all is not well. Series 3 is Series 2 regularised and Series 4 shows the resultant figures. Though you can't really see it in the illustration, Series 4 deviates from Series 1 (or, if you prefer, the theory disagrees with the actuality) by Series 5, which is shown multiplied by 100. I hope you're following this. Series 5 shows that 18 of the 27 tubes are either the same in theory as in actuality plus or minus half a millimetre (which is only just audibly discernible). Six tubes are within 1mm either way. The other three tubes stray 1.5, 2.0 and 2.5mm from

the ones on my wall. You'll notice that if Series 5 was regularised, it would show a rise, a valley and a rise. If the valley was projected back on Series 4, its curve would be that touch flatter. Perhaps this is where the truth lies but just at the moment, I haven't got the strength to go there.

The end of my fascinating excursion into mathematics is that I suggest you don't do as I've done (Series 1) but as I say (Series 4). If you want more modest beginnings or are making a set of bells for a small child, stick to the 8 note scale of C major.

I wouldn't be surprised if some of you are feeling a bit feint by now, but not for the reasons that I am. You'll be astounded at the roundabout tangled wool approach that I've taken, and like a digital Alexander the Great, you'll be able to slice through it with your finely honed intellect. I'm not being sarcastic. I really would like to know if there's a simpler, more reliable, better method of tuning these bells. I'd like to see definitive tabulation. So please, get in touch. Email tegan.foley@mytimemedia.com putting 'Bells' in the subject line.

A dubious commission

I have another problem. Or maybe my customers have a problem and that problem is me, I'm not sure. Perhaps everything is alright and as it should be. Anyway, I'm not sure that I can change. To be honest, I'm not sure that I want to change.

Years ago I made a dining table, six chairs and a sideboard for customers who then became friends. The designs were bold

PIC 5. John's rather splendid antique oak chest on stand. What do you make of this? When was it made? Is there anything wrong with it? Answer at the bottom of page 41

PIC 6. This dovetail housing may look a little heavy-handed but it worked a treat. The flattest board is likely to be a little cupped, and without cramping it dead flat, the dovetailed end would be cut unevenly and, when assembled, held in its cupped state. I don't like hand-held routing because of the possibility (inevitability) of jerks on and off the cut. Here, with a router in a table, as long as the board is held perpendicular, the setup is fail safe

PIC 7. The sides are trenched using a jig, remembering to stop before the front edge so that the dovetail does not show. Having taken the bulk of the wood away, the cutter is swapped for a dovetail cutter and the trench skimmed to shape. For this I re-sized the jig so that the fit would be snug (on a production run, this should be obviated: one jig should serve both operations. Ideally two routers could be used so that the jig needs not be moved

PIC 8. This is the bottom shelf assembled, leaving a rebate overall for the (much thinner) backboards. The backboards do not need to extend below this bottom shelf. If they did, they would foul the skirting board, accommodated on the sides by the cut-out. I left things a bit fine and the very bottoms of the boards needed shaving back just a little. The backboards were peppered in with plasterboard screws

>

TABLE OF NUMBERS

	Series 1	Series 2	Series 3	Series 4	Series 5
G	353.5	100		353.5	0
Ab	343.5	100	100	343.5	0
A	333.5	95	100	333.5	0
Bb	324	105	95	324	0
B	313.5	90	95	314.5	100
C	304.5	100	95	305	50
C#	294.5	95	95	295.5	50
D	285	90	95	286	100
Eb	276	85	95	276.5	50
E	267.5	85	90	267.5	0
F	259	75	85	259	0
F#	251.5	70	80	251	-50
G	244.5	85	75	243.5	-100
Ab	236	85	75	236	0
A	229.5	65	70	229	-50
Bb	223	55	70	222	-100
B	217.5	60	65	215.5	-200
C	211.5	85	65	209	-250
C#	203	50	60	203	0
D	198	50	60	197	-100
Eb	193	75	55	191.5	-150
E	185.5	50	55	186	50
F	180.5	65	55	180.5	0
F#	174	50	55	175	100
G	169	50	55	169.5	50
Ab	164	50	55	164.5	50
A	159		55	159	0

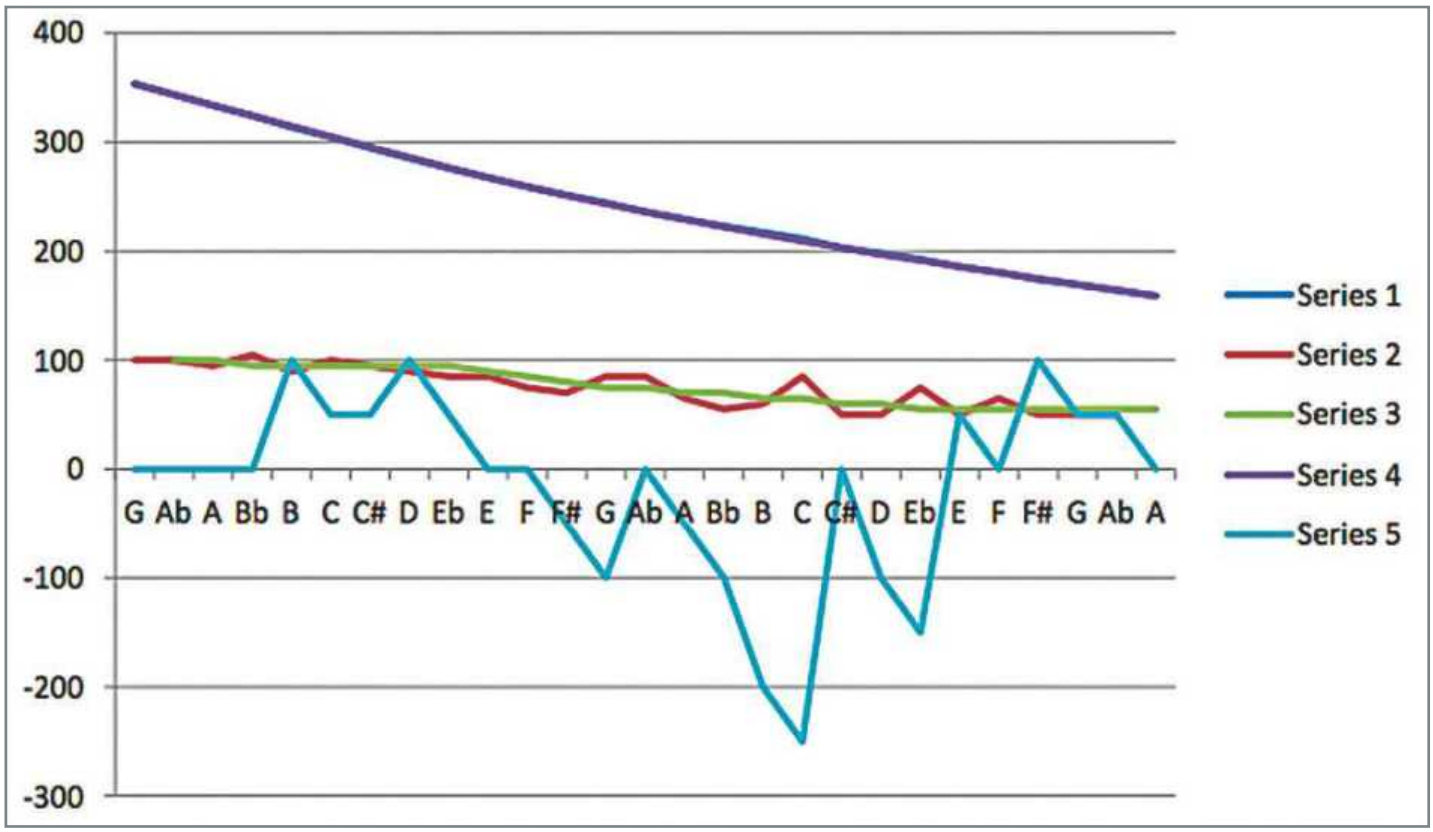
PIC 9. Though John probably has the largest collection of Rachmaninov in North Devon, his CDs do not fill the shelf. This is why I tried to talk him into a dedicated unit. But hey-ho, I can make him an extra free-standing shelf to double-decker his discs. I didn't ask John about decoration: small though it is, I did it anyway. I gave the top a slight, pointed pediment. A square case would have

PIC 10. And here; this is a good one. This'll teach me to get precious about the poise and balance of my designs. I went back the next day to take photographs and found that his grandchildren's toys had taken over the top of the bookcase. I don't mind. No, really; I don't mind

and the discussions long. Much later they told me how I'd come over. I've erased from my memory their exact words but it was along the lines of stubborn and determined. I thought I was being engaged and inspired. Anyway, my point is that that suite was probably the most dramatic and successful single body of work I produced, so in my book, an amount of, um, conviction is appropriate.

John asked me to make him a bookcase. I was somewhat excited because in his old cottage living room is a rather splendid grand old oak chest on stand (**Pic.5**). A bookcase sitting alongside that should surely be in oak too, gently ornamented, acknowledging its distant ancient relative. I saw through-tenons with delicate wedges; modest fretwork in the side and a ripple round the top. Or perhaps a larger-scale unit suspended, floating on the wall. 'Come up and we'll talk about it', John said. So I did.

Next to the chest is a fitted, oddly proportioned shelving construction made of cheap pine, jammed in from floor to ceiling with some boarding where the top shelf should be, presumably obscuring something like a soil pipe, though it can't be a soil pipe because that's elsewhere. The timber is thin and the shelves, though rebated, are held in with 38mm oval nails. 'I'd like one to match that', John announced, nodding towards the monstrosity. My heart sank. I swallowed back the word 'no!' but John is a friend



Observations

When cutting the tubes, start with the largest so that if you make a mistake, that tube can be used again further up the scale. Having fitted grommets in some tubes, I held them up between finger and thumb to test the sound. It was dull. That was disheartening, but when the tubes are strung, they really do become bell-like. The longer the tube, the better it sounds. A wider bore tube would be well worth investigating.

The bells sound best when struck at their very end with a knop – a hard plastic ball on a wooden stem would be best. At the moment I'm using an upside down screwdriver. When the bells are struck, they swing. This arrangement could never be a concert instrument. For this the tubes would require cord (elasticated?) running down through them, tethering them to a lower frame.

When I made the eight note sets, I sprayed the tubes white. This looked good except that with sometimes energetic use, the paint chipped. I wouldn't use clear varnish because it tends to break down and become patchy. I think I wouldn't use anything. In time, the copper acquires the look of bronze, especially if treated with wax

and his collection of CDs and books was spilling over the floor.

A furniture maker – or any other public servant – should do what the customer wants, shouldn't s/he? Mmm. Does the customer know what s/he wants? Has s/he realised the options and alternatives? Has s/he considered the impact from this angle and that? The economy of space? The ergonomics of use? 'How about a separate unit dedicated to CDs?' I asked. 'They'd look good all neatly stacked together'. 'No', John replied. 'I want one just like that'. I went home leaving all my enthusiasm behind me.

I mulled over the bookcase, but things only got worse. The shelves were deeper than standard stock and each would have to be joined: that alone would take many hours. Was it really necessary? If I made the bookcase in my workshop, could I get it through the porch and round the stairs? And even if I could, it being floor-to-ceiling, I wouldn't be able to stand it up! I would have to make the bookcase in situ. I'd have to move all his furniture up to one end and lie components out on the carpet. I'd have to accommodate a probably wonky ceiling. I wouldn't have room for cramps. I wouldn't have room to move. Aargh! What have I done? I shouldn't make furniture for other people. I should write poetry, take up topiary or go back to stamp collecting.

On top of these design considerations came pride. This is a small community and everyone introduced to the bookcase will know that I have made it. It's not that it has to be a piece of stunning magnificence; it's just that I don't want visitors to be met by 38mm ovals (and no, punching them home and patching the holes with filler does not make them disappear). That was the deciding factor. I couldn't make a replica ugliness. I wouldn't. And, as I have intimated, I shouldn't.

John, thankfully, was malleable. He heard my litany and when I suggested a smaller independent unit (with, albeit, the same shelf spacing) he brooked no objection. Phew! My enthusiasm returned like the tide.

The construction of the bookcase is not interesting apart for two elements. If I didn't want nails pinning the shelves in place; and if through-tenons weren't in the brief, how would I keep the whole thing together? The joint with most integrity is the stopped dovetailed housing. In the past, I've found these to be troublesome. Achieving the right level of friction is critical. Two little and the joints become ineffective; too much and assembly is a nightmare. **GW**

Closing thoughts

Answer to chest on stand conundrum: A local expert (who only saw the photo so could not be absolutely certain) thought that the chest with 'mitred moulding' was made between 1680 and 1720. The stand is too plain and dumpy to have been original. People used to drag these units as a whole and thus break the legs, so he considers the stand to be 1730–1740. The top drawer handles impinge on the moulding so none of the handles is original, though the escutcheons may well be. The handles too may be 1730–1740

Czeching out the latest tools

Andy King reports from Milwaukee's 2016 conference in Prague and tells us all about the latest equipment due to be hitting the shelves later this year

RIGHT: The new 9Ah High Demand battery is bigger than the standard 5Ah

RIGHT BELOW: It puts in impressive figures: 128 consecutive cross-cuts in 200 × 50mm stock

BOTTOM, LEFT TO RIGHT: The new 6Ah 12V battery is identical in size to its 4Ah counterpart

The power of this little drill is unbelievable! Hopefully one for the test bench soon...

Two new battery-only brushless motored nail guns will be available later in the year

One of the new 'One-Key' tools due to hit the market soon

Linked to the App it can give basic info on cycles on tools that need to attain a set power. It also allows more complex things, such as altering speed and torque controls on tools

It's always nice to be considered important enough to be invited along to attend dealer conferences as you get to see all the new products coming through for the year as well as gaining an insight into the technology and potential new kit in the pipeline.

This time around I was treated to a whistle-stop tour of Prague courtesy of Milwaukee, where I would also get the chance to check out the latest products coming out in 2016.

Battery technology

I've mentioned before that Milwaukee seem to be sleeping giants in comparison to some of the other established brands, but not only are they awakening, they are standing tall among them with their current range as well as their crop of products for 2016.

As with other main players in the industry, battery technology is still an important area and Milwaukee are pushing forwards in the lucrative 18V platform, but not looking to simply go for extra Amp Hours while retaining the same sized battery and cell structure, instead they've gone for an additional set of cells within the battery pack, with 15 cells instead of the usual 10, thus increasing the pack size, and of course, the weight. But in doing so, the Amp Hour is ramped up to 9Ah, and more importantly, the output is increased dramatically. However, it was refreshing to hear the MD and demo guys explain that this new battery pack isn't simply to go for the "ours is bigger than yours" scenario, and while it will fit all current Milwaukee 18V tools, this isn't a pack aimed at the drills, impact drivers or other tools that are already capable of running all day long on a battery or two. The new pack is designed to be used in high drain applications to bring tools, such as circular saws, into the realms of mains performance and offer that same day-long run time opportunity. There were plenty of examples dotted around where the battery had out-performed even 36V machines – the preferred option for higher drain applications. This innovation allows the end user to now stick with one tool platform, and simply swap to the higher Ah battery for such work that requires it.

Marketing Vice President Jason Chiswell presented the new products prior to going hands-on

Exceptional power

Sticking with the battery theme, but this time retaining the same sized unit, I was impressed to see a 6Ah battery for the 12V range. With the 12V range the end user who isn't working to the same 'big cut, big holes' applications that demand the 18V range, nonetheless the 12V tools are still very much an area on the rise, and there's an increasing amount of tools including smaller trim saws and so forth that will benefit from these longer run times.

Although not a new range, I have to comment on the exceptional power that the fuel impact drivers and drills are capable of using this voltage. I'm very keen to get these units onto the test bench very soon!

New offerings

But back to the new stuff! Although I'm a woodworker through and through, the plumbers and electricians at industrial level are being well looked after with some fearsome looking battery-powered crimpers, cutters and pipe work tools. There really was a new tool to appeal to all the various different trades, which is what I love about attending events such as these.

Moving to the next workstation, having reviewed the 'HoleHawg' and its long bore, big diameter capabilities, it now has a bigger sibling, the 'SuperHawg', a bigger, more powerful machine that still runs off 18V batteries but lends itself well to the new 9Ah versions.

On this same workstation, out from behind a rack emerged two new brushless motored nail guns. These nice looking, well balanced units operate on battery only so will appeal to anyone looking to move away from the gas-powered options. There will be a 50mm capacity 18g straight nailer and a 63mm angled version and I managed to have a go with both units. Both have sequential and bump options as well as plenty of power along with speed in bump mode to fire around three fixings per second, with around 600 fixings per charge on a 2Ah battery.

'One-Key' technology

There were plenty of other little nuggets that will be emerging when these new machines land on the scene later in the year, but the biggest piece of innovation is built around the use of Bluetooth technology.

Branded as 'One-Key' it's designed to work with tools that have the One-Key system built into them. It's a very adaptable system that, in its most basic form, allows you to keep an inventory of all your tools, not just the Milwaukee products you own, but One-Key products immediately link to the software package and associated App to upload all their relevant information, such as serial numbers, product type and so forth. It allows bigger companies to keep track of their tools efficiently with the Bluetooth linkage ensuring tabs can be kept on products out in the field, as well as who has the tools and whether they have been mislaid.

But there's a lot more to this App that although not ready to go yet, the prototype applications on show indicate just how powerful it is and can potentially become. Specialist applications that demand accurate and consistent results, setting torque levels on fixings such as bolts, for example, can now be set up using the App.

The One-Key system will allow levels to be set on tools to alter speeds, torques and other parameters that can be stored and Bluetoothed to the tools for individual applications so that each can be optimised to suit, and loaded up as required.

It can also generate reports, which can be checked to see if a particular application achieved the result it was set up to do. Although this particular system may not appeal to one man band end users in its entirety, the potential of the system is such that it could be a very powerful application for bigger companies especially.

That said, it will still fit in well with smaller companies and solo users as it evolves while, at its most basic, the inventory option is worth having just so you can keep track of what tools you actually own!

I have to say that the possibilities of this App's expansion as technology moves on makes it look like it could be a big winner.

Exciting times are ahead for Milwaukee and their users both in the tools and the technology of the App, so watch this space for updates and reviews once the tools are ready for their official launch! **GW**

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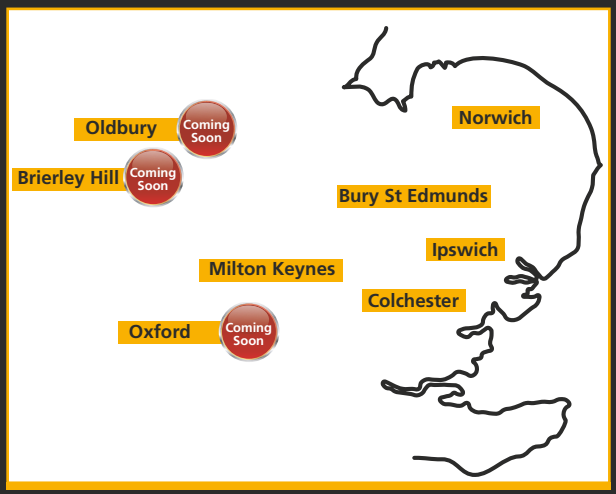

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Le bureau de l'agent console desk

Combining traditional craftsmanship and materials, the Le bureau de l'agent console desk embraces modern technology with elegance to house your favourite modern digital devices

New from Made By 68° is this luxury, hand-crafted desk, which is specifically designed with the storage and use of modern digital devices in mind. The exquisite Le bureau de l'agent console desk is made from fumed oak, bog oak and rippled sycamore, and the desk is lined with full-grain leather, which adds to the sumptuous feel. Hidden within the elegant design is a complex build, which allows the user to store and charge their iPad, Macbook or other devices.

The design is understated elegance, with its sleek lines and tactile feel inviting the user to explore the finer details. The built-in hidden storage allows the user to store his/her electronic digital devices out of sight. Made By 68° believes that this type of furniture, which incorporates charging points and storage for laptops and iPads, will become the norm. The company are also exploring several other pieces that will feature built-in wireless charging.

"I believe our desk breaks new ground in terms of design and function, says Richard Warmisham of Made By 68°. "We have combined traditional craftsmanship and materials, but also explored how we live today and the reality that many of us are occupying smaller and smaller homes and as a result, our furniture needs to fulfil many needs. The desk has been specifically designed to provide out of sight storage for your most precious Apple devices. The hidden leg storage areas are the perfect location for your 15in Macbook Pro, iPad Pro and Macbook Air as well as all the other items that would ordinarily clutter the drawers and desktop."

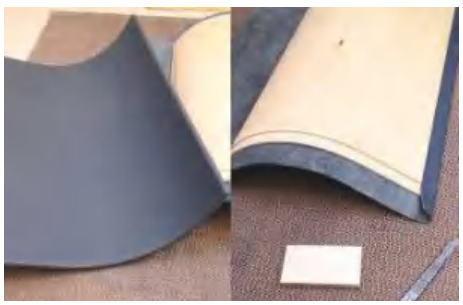
To find out more about this brand-new piece, see: www.madeby68.com/lagent-de-bureau

The bog oak door components

Close-up of finished drawer

Doors being formed in vacuum bag

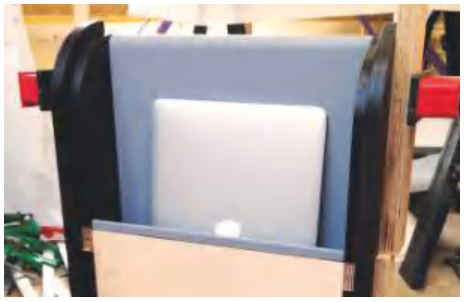
Final veneer lipping applied



Leather lining the doors

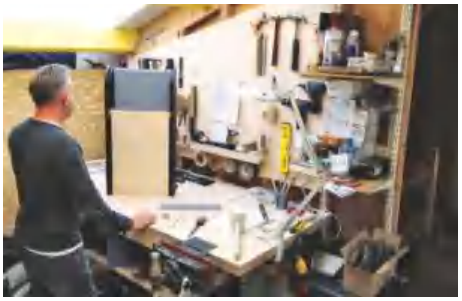
"I believe our desk breaks new ground in terms of design and function..."

– ***Richard Warmisham of Made By 68°***



Leg assembly with Macbook Air

Lipping off former



Richard with leg assembly on the bench

Soss hinges and finished routed pieces

An air of mystery

The L'agent de bureau is a commissioned work and is limited to five pieces. This particular example has storage in both legs, allowing the user to store a 15in MacBook Pro, iPad Pro and iPad Mini in one leg and several lenses and mirrorless camera in the other. Both storage compartments are fully lined with a matching lighter grey leather, which complements the darker grey leather outer.

The metal work is hand-polished aluminium. The storage doors open completely and are lined on both sides with leather; the doors use hidden hinges so that the desk lines and shadow detailing are kept crisp and clean.

The desk measures 1,180mm long × 400mm deep. Its small footprint belies the vast amount of storage for your digital devices and intelligent consideration for modern workspaces. The perfect console to pen your memoirs, while playing *Sim City* and browsing the performance of your stock portfolio online.

Free-standing buildings

Carrying on with his new series, **Michael Huntley** looks at the subject of free-standing buildings, in this case a potting shed, which was built from scrap and recycled timber, as well as looking at other examples

MAIN PIC (ABOVE): My garden shed, which forms part of the garden design in wisteria season

PIC 1. (RIGHT): The basic shed structure before the garden developed. This shed is now 16-years-old and the posts are still sound

Last month I looked at a lean-to building, but this month I am going to consider a simple free-standing building, in this case a potting shed, although it could be adapted for any other 'shed' use. To understand how a building stays up you need to be aware of the importance of triangles. Basically, if you fit a diagonal brace to a rectangular frame, the frame will not collapse. Of course, it is not quite that simple: there have to be certain fixed points, but they can very often be the heavy ground-cill beam, which is attached to the foundations. >

PIC 2. (TOP LEFT): Close-up of the concrete staddle stones, rather encased in wisteria growth

PIC 3. (ABOVE): Diagonal temporary struts used during construction

PIC 4. (LEFT): Close-up of a joint between the post and wall-plate

The potting shed (**Pic.1**), shown on page 49, was built from scrap and recycled timber. As I said in the previous article, using recycled timber is satisfying and ecologically sound but does sometimes lead to a visually less than ideal result. It may also require odd and unexpected jointing techniques – for example, using modern adhesives that would have not been available to our grandfathers.

Staddle stones

In this case, the problem of the timber touching the earth was solved by casting my own 'staddle stones' in concrete. A pyramidical former was made with a hole for a 150mm nail in the base. The box was lined with plastic to stop the concrete sticking to the chipboard, the nail inserted such that half of it was inside the box and half outside, and the concrete poured and agitated. When cured, the box was carefully removed so that it could be used again, and I was left with a heavy cut-off concrete pyramid with a metal spike in the top that could have a wooden post or rail securely planted on top (**Pics.2** & **3**). In this instance, because it was to be a potting shed, and

because I didn't have much timber, I chose to do without the horizontal rail, usually called a cill-beam, and plant the vertical posts straight on top of the staddle stones. I did drill a hole in the bottom ends of the timber for the 150mm nails first, though. That did give the posts some vertical security and stops them sliding off the staddles.

Setting out geometry

The staddle stones had been arranged in a rectangle and the diagonals checked. The nails in the top of the stones made it possible to get very accurate readings on the tape for the diagonals. For initial rough setting out, I used a large 3, 4, 5, triangle nailed together from scrap wood. A 3, 4, 5, or a 6, 8, 10 triangle, best made in feet rather than metres because the units are more convenient, is a right-angle Pythagorean triangle, which will give you an internal 90° angle.

When erecting a building on your own you need to make use of lots of raking struts (**Pic.3**). These are long pieces of timber that can be cramped, ideally using single-handed speed cramps, to the top end of the posts to keep the posts vertical. Let me say at this point that >

Historical timber-framed buildings

Boarhunt Hall at Weald & Downland Museum. This is a 14th-century building; a vast improvement on the Anglo-Saxon building shown in the previous article

Photograph courtesy of G. Grime, Weald & Downland Museum

This photo from the 1970s shows the re-erection of the massive central 'cruck' frame timbers

Photograph courtesy of Weald & Downland Museum Archive

The interior showing the crucks supporting the roof timbers

Photograph courtesy of G. Grime, Weald & Downland Museum

An interior shot showing door and window. The window has wooden mullions but no glass at this date, which shows how dark the interiors of these buildings were!

Photograph courtesy of G. Grime, Weald & Downland Museum

Buildable **sheds**

A medley of interesting buildable sheds I have found around the country, with a noticeable gardening slant!

A 'green roofed' shed at RHS Wisley, in Surrey. See www.rhs.org.uk

A bower with a 'cruck' roof at RHS Rosemoor, Devon

A simple shelter in the children's play area at RHS Rosemoor

you always need more braces and cramps than you think. The first two posts will, in theory, need four braces each. That is eight braces and eight cramps. In practice, you can usually get away with fewer, but I would certainly want to have six cramps and braces available. It is also a good idea to have an extra person around to hold things even if they are not actually working. Remember that you are going to be putting timbers up above your head even though it is a single storey building, and a hammer or a cramp falling on your head can do serious damage, so work carefully, ideally with a hard hat at appropriate times.

Logistics

OK, so we know how to keep the corner posts up, on stones with 150mm nails locating them centrally, and temporary braces holding them vertical. The next part to consider is the wall-plate. This is the long, heavy rail that joins the posts and onto which you fix the roof. It can be seen clearly in **Pic.3**, as can various forms of diagonal brace. I should perhaps explain this photo. The reason that there are all kinds of 'shed' contents everywhere is that my wife and I built the shed on our newly acquired plot of land before we built the house. All our belongings except my tools and the 'garden' stuff were in storage. So the contents of the shed that was still being built had to be packed away in the half-finished shed every night and got out again the following morning! Not an ideal way to work but it did keep everything dry and notionally secure on what was then a piece of open land waiting for the house-groundwork to start.

But I digress. The wall-plate needs to be supported by a half-lap joint on top of the posts (**Pic.4**). I described half-lap joints last month. Remember that this article is about the simplest durable structure in traditional style, buildable carefully on your own or with an assistant, so I am not using time-consuming mortises or framing on the flat and raising whole walls in one go, which would require more people and more experience.

Raising the wall-plate

Having cut all the joints and checked on the flat that they fit, braced all posts and checked for verticality, placed your single-handed cramps within reach and open to about the right size, call your helper over and tell them where to stand safely. The wall-plate is then lifted into position and cramped to the posts. If you were confident you could have drilled the pilot holes for pegs, nails or coach screws beforehand, but if not, do it now. If you are hammering a piece of timber held by cramps, the hammering action can undo the cramps, so do not have your helper standing under a cramp or under the wall-plate – stand to one side. Coach screws are more expensive but can easily be driven using a socket set and don't create vibrations in an unsteady structure, so I prefer coach screws at this stage of the build. Once the four-square frame is up and secure, then you can start banging in nails on the later joints. Repeat the wall-plate raising process for all four sides. Once you have two adjacent sides up it will get easier. When all is finished, check that you have braced the outside of each wall, make sure there are no tools left balanced on the wall-plate ready to fall, and go and have a well-earned cup of tea. **GW**

NEXT MONTH
In issue 306, Michael will consider the roof structure

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KSS300	300mm	40mm	27mm	-45° to +60°	Yes (18v)
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KSS60	408mm	61mm	47mm	-60° to +60°	Yes (36v)
KSS80	370mm	82mm	55.5mm	-60° to +50°	No

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Sit back and relax!

Get ready to enjoy some relaxing summer days by making this simple and clever folding lawn chair with **Carl Jacobson**

STEP 1. The first step is to pick out three pieces of cedar (or you choice of timber), measuring 2.4m × 88mm × 25mm and one piece measuring 2.4m × 140mm × 32mm. The 2.4m × 88mm piece needs to be ripped down to 32mm on the table saw. The 2.4m × 140mm × 32mm piece needs to be ripped down to 25mm on the table saw. After you have them down to width, they need to be cut to length with a chop saw

STEP 2. In terms of hardware, you'll need a total of 2.4m of No.8 threaded rod; eight × No.8 washers; eight × No.8 nuts; and eight × No.8 cap nuts

Also called a Kentucky stick chair, this simple design folds up in the winter for storage and is really comfortable to sit in during the summer months. I chose to use cedar for this project as it's a great outdoor wood that holds up well. This is an easy project to make and involves cutting all the components to length using the table saw. Once cut, it's just a case of drilling holes through the pieces at the given points, then threading wire through the holes to tie all the pieces together.

The chair design is low and laid back and can easily be folded up and stored, or carried. The total cost of materials for the chair, including hardware, is around £34. **GW**

STEP 3. Now on to drilling the holes. You need to drill holes in all the pieces using a drill press. Set up a stop block and fence. The 150mm and 698mm holes need to be drilled 20mm in from the ends on both pieces. 305mm pieces need holes 20mm from one end and 54mm from the other. The 1,016mm pieces need holes drilled 20mm in from one end, and 343mm from the other end. The 610mm pieces need holes drilled 20mm in from the top, and 254mm in on the same end

STEP 4. You can put the first threaded rod in by hand – this is the top of the back. Put a little wax on the threaded rod – it really squeaks without it! The easiest way to put in the other rods is to hook them into a drill. They will feed themselves in, which makes this part of the assembly very easy. After the rods come out the other side, put the washer and two nuts on each piece. Use a hacksaw to cut off the excess rod. Put the remaining washers and nuts on. The final step in assembly is to install the stop blocks; these are the 50mm pieces. On the top of the 610mm pieces (rear legs), come in 254mm and glue the stop blocks. When the chair is open, the 698mm pieces will rest on these

STEP 5. In terms of the finish, you need to choose something which is durable – I used General Finishes' Arm-R-Seal and applied it with a brush

STEP 6. The final step is to grab a nice tall glass of your favourite beverage and enjoy summer!

CUTTING LIST

38	×	25	×	150mm	11 off
38	×	25	×	1,016mm	2 off
140	×	25	×	610mm	2 off
38	×	25	×	50mm	2 off
38	×	25	×	305mm	8 off
38	×	25	×	698mm	8 off

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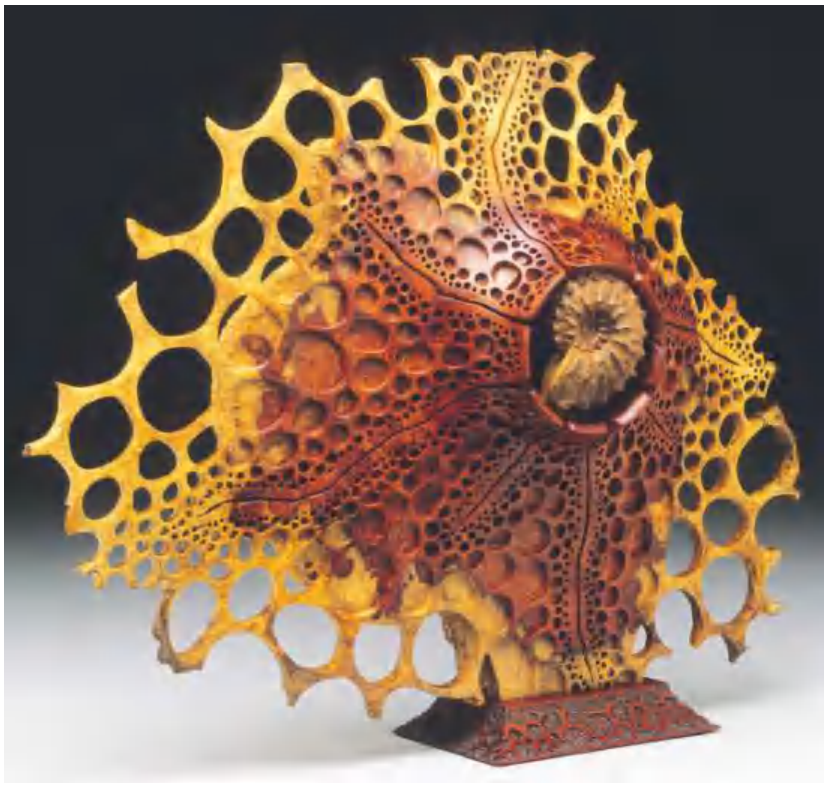
Biology meets art

Celebrating biology through the medium of wood, **Mark Doolittle**'s pieces serve to express the dynamic form of growth and symmetry encountered in cells and tissues, as well as in whole organisms throughout the natural world. **Tegan Foley** finds out more

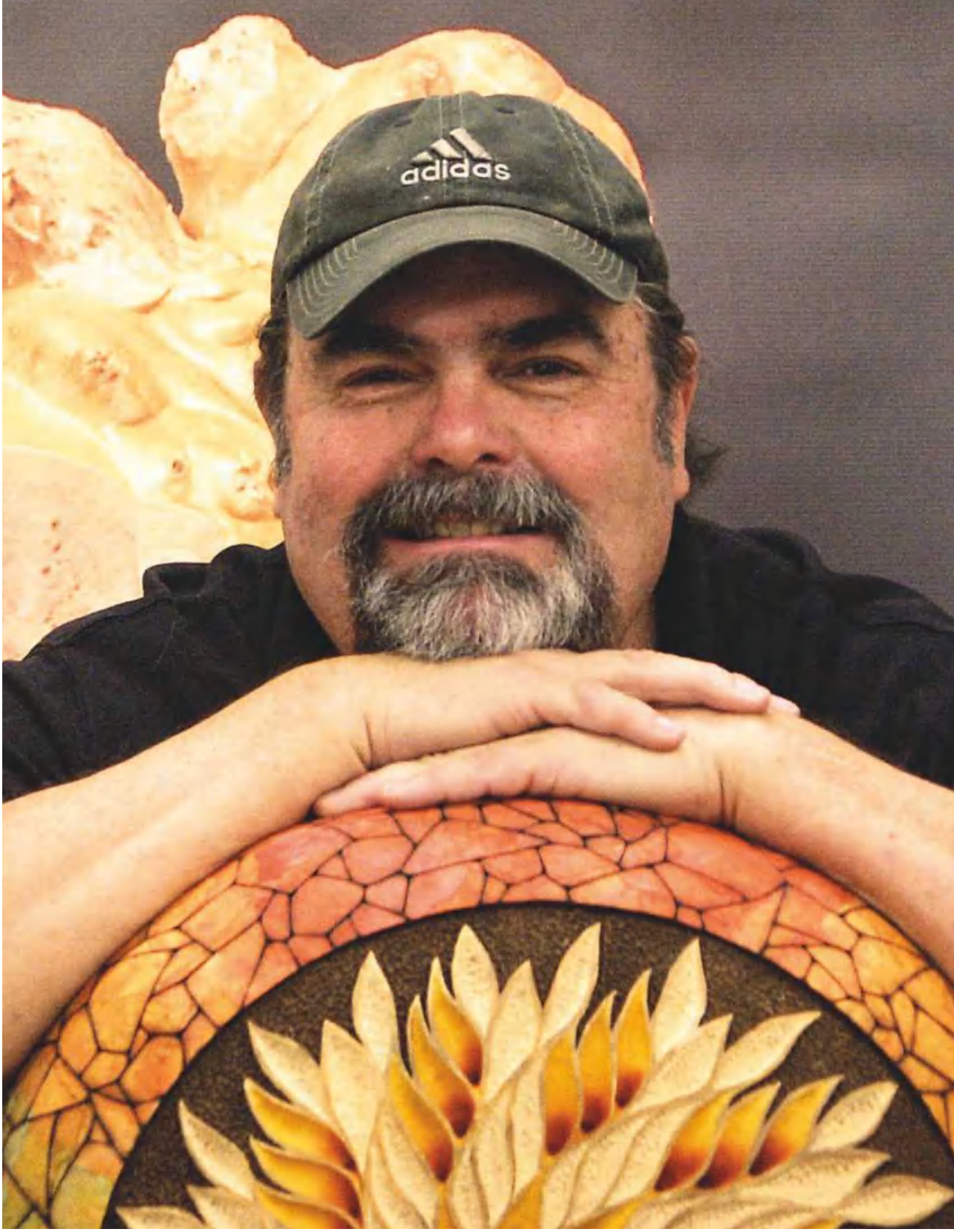


Upon seeing an image of one of Mark Doolittle's pieces, I was convinced that what I was seeing was in fact a piece of coral, but I was wrong – it was actually made of wood! My mind was then turned upside down and inside out as I tried to fathom how on earth this was possible! I knew I was seeing the work of a creative genius so I had to get in touch to find out more about the man behind these amazing and beautiful pieces.

It may come as a surprise to hear that Mark's background is in the fields of cell and molecular biology, which he studied back in the '70s and '80s, going on to graduate from UCLA with a PhD in biology. After receiving his doctorate, Mark stayed on at UCLA for around 25 years to continue a career in biomedical research as an Associate Professor of Medicine, but

ABOVE: 'Ammonite' made using amboyna burl on an African padauk stand – 330mm high × 1,127mm wide × 75mm dia.

RIGHT: 'Ancient Tide Pools', made using carved Afzelia burl and featuring 15 inset fossil ammonites. 813mm high × 330mm wide



TOP LEFT & RIGHT: 'Maple Jewellery Box', featuring a maple burl side with African padauk top – 100mm high × 279mm wide × 150mm dia.

TOP MIDDLE: A selection of fossils for Mark's artwork

during this time, his interest in woodwork began to develop and in 2002, he decided to make the move to become a full-time wood artist.

Mark tells me that the major influence in his style and vision is his background in biology: he finds beauty in the complexity of biological organisms, cells or forms, which his pieces depict. "In my artwork, I try to express the dynamic form of growth and symmetry encountered in cells and tissues, as well as in whole organisms throughout the natural world. My work is meant to provoke an emotional response in the viewer, like a flower would to a child."

He says that while his work is not representational (he is not attempting to accurately portray an actual biological structure), it develops by using simple shapes and structures, like branching arms, holes and fissures, but changing their size, shape and location as they are repeated to build-up complexity in the overall design. He usually orders this complexity along lines of symmetry (often radial), which is a major feature of natural forms (the arms of starfish and the whorls of seashells, for example).

When asked about his sources of inspiration, aside from biology Mark mentions the work of world-class sculptural turners Bill Hunter, Alain Mailland and Mike Shuler, as well as his older brother, Jay, and his wife, Bev, both of whom are career artists.

Carving a niche

Creating such complex and intricate pieces obviously requires a great deal of skill and patience, but how did Mark discover the techniques for making such detail >

possible? He tells me that the starting point for developing his artistic style was gourd carving: "Early on with gourds, I was carving Native American motifs as a way of learning basic carving techniques, but I soon progressed to a style that reflected my interest in biology." Although he still uses gourds today, he favours wood as a primary medium because it provides more creative flexibility with regard to shapes, thickness, colour and textures.

Mark's earlier pieces were more functional (clocks and boxes) but he was soon concentrating on pursuing purely sculptural pieces. Deciding to explore vessel forms, he started turning on a lathe only a year ago: "Vessel forms have an innate functional quality to them, but can be used to create purely sculptural pieces as well. In addition, grain pattern and the characteristics of a particular piece of wood are often best exhibited after turning. By adding my carving style to a turned wood vessel, I can create unique sculptural objects, playing off the characteristics of the wood, but in an overall form that is familiar to everyone," he says.

TOP: 'Beautiful Mind' – basswood (bust), mahogany (shields) and Julie Lence-Panto butterflies – 1,016mm high × 762mm wide × 203mm dia.

ABOVE: 'Art in Art #4', a collaborative piece made with Chakte Viga and Michele Foster jewellery – 302mm high × 305mm high × 75mm dia.

Mark usually incorporates biological specimens, mostly fossils, within his pieces by insetting them into the wood, much like a jeweller incorporates a stone into jewellery. "I often use these biological specimens as central features in my sculptures, playing off their form and symmetry. A really good example is my piece 'Ancient Tide Pools' (see page 58), which has 15 fossil ammonites that were inset into carved cups in the wood that add form, colour and movement to the piece."

In terms of the tools and equipment used to create them, he says that most of the piercings are made using rotary burrs and bits, spun by a Foredom micromotor: "I usually use bits that have a cutting head with the geometry of a straight cylinder. When I am cutting, I hold the bit perpendicular to the surface and often clean up the piercings using 150 grit diamond burrs."

Mark enjoys carving with both hand and power tools: he prefers gouges for carving human faces, but for his organic carvings, he prefers rotary carving because it is the most effective for the forms he is trying to create. In a nutshell, the carving dictates the tools he uses.

In terms of processes, there are several methods to creating his sculptures, including milling (the machining and gluing of rough wood into usable blocks with true faces and sides); shaping and turning (carving the milled blocks into the basic form of the sculpture); detail carving (carving the complexity of forms that comprise

CLOCKWISE FROM TOP LEFT:
'Beauty Beneath', turned and carved from a spalted big leaf maple burl – 356mm high × 150mm wide × 150mm deep

'Coral Sculpture' in basswood with stained edges – 610mm high × 610mm wide × 100mm dia.

A selection of Mark's carving tools

'Vortex' – gourd carving by Mark Doolittle; paper applique by Kathy Doolittle – 356mm dia.

OPPOSITE RIGHT:
'Seascape', featuring Honduras mahogany with a Claro walnut base. Contains seven inlaid fossil ammonites – 660mm high × 343mm wide × 178mm dia.

his style); and finishing (sanding and application of a finish). "Of these methods, detail carving is often the most time-consuming part, but is probably the most enjoyable as well. It is the creation of these detail forms that flesh-out my sculptures and make them come alive."

Commissions & collaborations

In terms of working to commissions, Mark says that these don't come about in the usual sense. He has made pieces for individuals, and shares his concepts with them, the wood he chooses, and photos of the work in progress: "I really enjoy sharing the process of my art with the customer, and often we strike up a friendship as a result." Mark says that while he is happy to be dictated by a brief, he does require a high degree of freedom in the creative aspects of a piece.

Mark has collaborated with several other artists to produce pieces, including a butterfly artist and a jeweller: "In these cases, the concept was mine, and I used their expertise in their chosen medium. In the case of the butterfly artist, they helped choose and install real butterflies that were arranged around my carved head of a woman in an artwork piece called 'Beautiful Mind' (see page 60). In the case of the jewellery artist, I used jewellery pieces that were already made, and created wood pieces around them that would hold the jewellery piece, but also allowed the jewellery to be removed if desired. He called this piece 'Art-in-Art'."

Design process

When coming up with ideas for a new piece, this arises in two ways. In one, Mark begins with pencil and paper, sketching out shapes and trying out forms: "Sometimes I have in mind a certain type of fossil or mineral that inspires me (e.g. an ammonite or fossil fish), and I >

create around those objects. In executing these designs, I often use milled wood with straight edges, and glue boards together in order to obtain the appropriate dimensions. The resulting wood block becomes the canvas, and I often use fairly detailed plans and templates to rough out the carving. Of course, final shaping and detailed carving is always done freehand, and I often sketch these elements directly on the wood to guide my efforts." Mark tells me that in some cases, he uses wood dyes, pigments, and glazes to 'pop' the carved elements or to emphasise an edge.

In his second method, the wood becomes Mark's primary motivation, and he carefully works to design around preexisting grain patterns, colours and textures occurring within the wood itself. Before starting, he examines the wood periodically, often over several weeks, in an attempt to see underlying patterns and forms that make that particular piece of wood unique and striking: "In these cases, the woods I choose have highly figured grains with rich colours and depth – I prefer woods not milled on the edges that present a natural (or 'live') edge. In executing these designs, I usually don't use templates and rely completely on freehand carving."

TOP: 'Beauty Beneath' in progress

ABOVE: 'Anemone', Ambrosia maple – 100mm high × 330mm wide × 330mm dia.

The amount of time Mark spends working on a piece obviously varies tremendously depending on the size, the detail of the shaping and carving, and the characteristics of the wood that influence how well it carves. He tells me he can spend anywhere from 8-180 hours on a piece, but an average time would be around 40-60 hours.

Work space

Having a view of the desert and rock formations that make up the Joshua Tree National Park does wonders for inspiring Mark's creativity and his workshop is situated in an 800sq.ft. building separate from his house, with a 10ft high ceiling and three large, north-facing windows. There is also a 100sq.ft. 'finishing room' that is temperature and humidity controlled in which wet wood, and other temperature/humidity sensitive materials are stored. In terms of large equipment, there is a table saw, 18in bandsaw, 30in drum sander, drill press, router table, 6in jointer, 12in disc sander and spindle sander, and finally a Nova DVR XP lathe, which Mark says is probably his favourite piece of equipment "because turning it is such a dynamic process that allows one to turn a rough piece of wood into a variety of beautiful shapes and styles." Mark's carving equipment includes routers, micromotors, a larger variety of bits and burrs, a whole set of gouges and chisels, as well as rasps, rifflers and files. So, as you can see, this space is very much a hive of activity and a place where this maker spends a great many creative hours.

Accolades

Although many of Mark's pieces have been awarded various awards and 'best in show' commendations over the years, he says that his proudest accolades come from other artists who know what it takes to create and sell artwork for a living. In terms of the pieces he is most proud of, he has several: 'Ancient Tide Pools', which he considers to be his best wall hanging; 'Seascape', one of his favourite freeform sculptures; and 'Sunken Vase' is his favourite turned and carved piece so far.

While his work has appeared in a variety of galleries over the years, he is now represented by the del Mano Gallery of Contemporary Craft, which is well known for the quality of its wood artists and Mark's work fits in perfectly with their ethos.

The future

In terms of what the future holds for Mark, he says that he is still fascinated with combining turning with carving and feels there is still a lot to explore in this area. With this in mind he hopes to continue woodworking for as long as he can with a goal of becoming the best woodworker he can, and to explore new ideas and techniques along the way. Judging by the amazing and ever evolving pieces we've seen here, I have no doubt that Mark's creative bounds know no limits, and I can't wait to see what he creates next! **GW**

FURTHER INFO

To find out more about Mark and his wonderful pieces, see www.markdoolittlestudio.com

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A cracking console

Charlie Gapay shows how you can make your own modern TV console table in just a few weekends

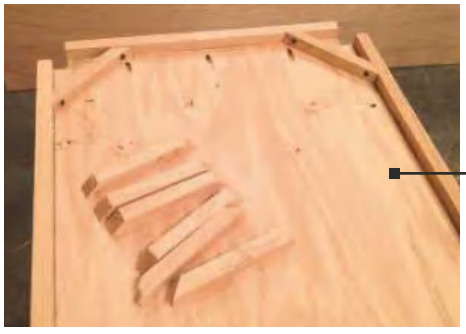
My parents had a tiny book shelf for their new TV so I decided to build them a TV stand as a Christmas present. The console took 3-4 weekends to build and cost around £142 in materials. The oak wood and light stain was chosen to match existing furniture. The final dimensions of the piece are 1,651mm wide × 508mm diameter × 686mm high. **GW**

STEP 1. The first step is to cut 20mm plywood for the top and bottom of the TV stand

STEP 2. Next, notch corners to fit corner posts with an edge to meet the depth of the 2×2 corner post

STEP 3. Glue and finish, then nail edge pieces to the top and bottom

STEP 4. Reinforce the finished edges to the top with pocket holes, using the Kreg jig



STEP 5. You can now add braces for the hex bolts to support the corners. These require a counter-sunk hole for a corner screw

STEP 6. The legs are then attached using a bolt

STEP 7. You then need to repeat the process for the bottom shelf with a 50mm gap for clearance under the stand. The bottom is held up by support pieces, as shown in the photo, as the corners are screwed in

STEP 8. Aligning the corner bolts for the bottom was difficult, so I opted for pocket screws instead

STEP 9. As you can see, the top and bottom of the console are now complete

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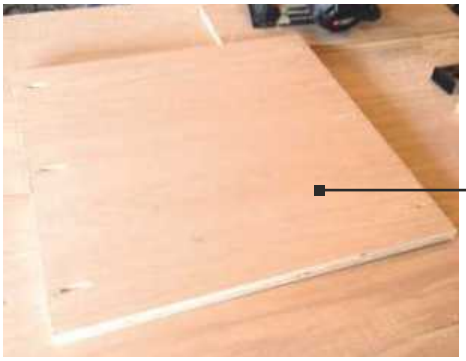
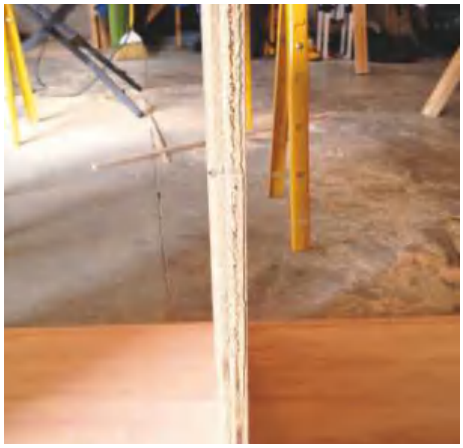


STEP 10. The next step is to measure the panels for the sides, then cut and secure with pocket jig screws as before

STEP 11. The divider panels can then be cut and secured with pocket jig screws



STEP 12. You need to leave a slight gap in the front to allow for the oak iron-on veneer facing

STEP 13. The next job is to measure the centre shelves and secure with pocket screws

STEP 14. The support brackets for the shelves can then be cut and screwed to the sides and middle

STEP 15. Next, cut and edge the left and right shelves with finishing trim, then, measure and cut the drawer fronts to the size of the openings. I opted for two drawers at the bottom and left the top open for a digital box and/or DVD player

STEP 16. Measure the drawers and rip notches for the bottom. Take the sides in by 25mm to allow for the rails and secure with pocket screws to the front

STEP 17. Next, insert a 6mm panel for the bottom

STEP 18. To finish, screw in the drawer back

STEP 19. Measure and cut the front doors with a 45° angle. Rip and notch the door frame pieces to allow for the plexiglass insert

STEP 20. You can now glue and screw the corners. You need to add glue and a 'foot' on the corner. The foot can then be sanded off and cut

STEP 21. The no-mortise hinges can then be attached

STEP 22. Cut holes in the back for wire access. Apply two coats of light honey stain followed by three coats of matte polyurethane

STEP 23. You can then attach the drawer rails

STEP 24. Attach glue to the inside frame, insert the plexiglass and you're ready to clamp up

STEP 25. You can then attach the magnets for the door

STEP 26. Add mirror tacks for additional holding of the plexiglass, then install the knobs

STEP 27. That's it – job done!

Letters & Makers

Letter of the month

Every man to his trade

Dear *GW*,

In keeping with almost everybody of my social standing, my first home, as a married man, had linoleum on the floor of the main room, with a rectangular carpet in the middle of it. At that time, just after World War II, only the very well 'heeled' possessed fitted carpets.

In the fullness of time, however, I managed to climb to those dizzy heights and measured up for a fitted carpet in our lounge.

Up until then it was referred to as the 'front room'. It became known as 'the lounge' the moment we started to sink into the pile of our newly acquired affluence. It was professionally laid too, so there! Then came the snag. The extra thickness of an underfelt and a deep piled carpet together formed an immovable barrier when entering the room. The door simply would not ride over them. The removal of door hinges, to be replaced by rising butts, was at that time beyond this DIYer's ability. The only solution it seemed was to cut a bit off the bottom of the door. Even with my limited knowledge of the requirements of the task, I resisted the temptation to lie on my stomach facing the door in an attempt to saw 10mm off the bottom of it to ensure sufficient clearance, and in doing so, probably invite a hernia or a dislocated spine.

I decided the offending door had to come off its hinges in order to place it on a saw table positioned on the kitchen table.

I forgot to mention, the house I refer to was just under 100-years-old, and the screws holding the hinges had been in position doing their task of supporting the door for the entire time. I could hardly see them for the layers of paint previous tenants had lavished on them, but they had to come out...

The operation was finally accomplished by the careful use of a blowtorch to soften the paint, the tip of an old 6mm chisel to remove the offending goo, and finally after repeated blows from a large screwdriver on the head of the screws to slacken the threads in the timber of the doorframe, they capitulated and the door was free of its frame and ready for 'surgery'.

I contemplated the task ahead of me and quickly decided that accurately sawing 10mm off of a 50mm-thick door, 762mm wide would be too much to ask of any enthusiastic amateur like myself.

Planing was 'plainly' the answer. But what happens when a plane's blade shoots across the edge of an unknown number of layers of paint? The answer is an untidy edge at the bottom of the door as dried paint chips fly in all directions.

I decided that if I first made a cut with my Stanley knife along the line to be planed, I would eradicate the problem and finish up with a job I could be proud of. I first cramped my steel ruler along the line so that I had a firm edge to guide the blade of my knife along.

It was at this juncture that my friendly next door neighbour made an appearance. He gave me an incredulous look and enquired, with a smirk on his face, what I was doing. I explained the task I had set myself with the vocabulary one would use to someone with the same amount of knowledge on the subject as myself.

The excitement of the occasion caused me to completely overlook the fact that I was talking to a foreman joiner with some 20 years' experience. He turned his back on me, disappeared into his workshop and returned two minutes later, clutching the biggest cross-cut saw I had ever seen in my life.

Without a word he shouldered me aside, removed the door from the kitchen table, spread his legs wide, bent his knees and held the door across them with his left hand 'vicing' it into the appropriate position. For the next two minutes his right arm and the hand grasping the saw were a flash of blue light as they moved with incredible speed and accuracy.

At the end of the two minutes, there lay on the floor at his feet a piece of timber exactly 762mmn in length and precisely 10mm in thickness, and not a drop of sweat could be seen on his brow. The edge of the door was as new.

I stared in wonder and admiration, and could only think of one thing to say: "Well, I'll be darned!" Every man to his trade, say I.

Wilson Taylor

Wilson, what a fantastic, and not to mention humorous, account of the history of woodworking and DIY, which I'm sure many readers will both identify with and find amusing! Thank you for sharing your story with us!

WRITE & WIN!

We always love hearing about your projects, ideas, hints and tips, and/or like to receive feedback about *GW*'s features, so do drop us a line – you never know, you might win our great Letter of the Month prize, currently a Trend Snappy Colour Ring bit set. Write to the address on the left for a chance to enhance your marking capability with this versatile workshop aid

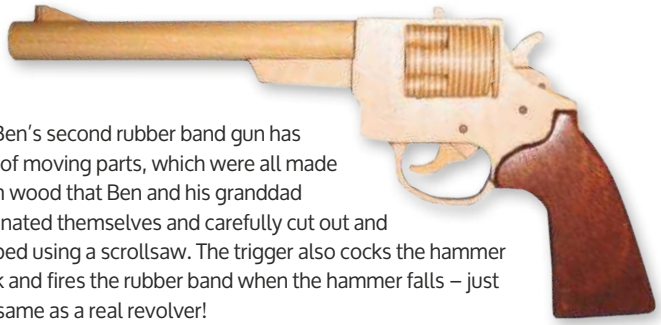
Two of the chairs Andy made at the recent Midlands Woodworking & Power Tool Show in Newark

A man with a plan

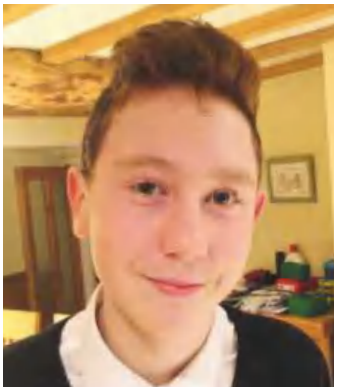
Fresh back from the Midlands Woodworking & Power Tool Show, in between chatting to people Andy King managed to make four of his pallet chairs, and they all look the same, thanks to our handy A2 pull-out plan in the last issue.

"The show was six hours per day, so around three hours per chair with interruptions – I reckon I could get it down to about two and a half hours or less without stopping. As usual, before I could finish one, someone wanted it!" Andy tells us.

In the photo here, the chair on the left has been waxed and given a coat of UV protection using a product from a company called Just Pudding Basins (www.justpuddingbasins.co.uk). Andy thought they were at the wrong show at first, but they actually sell a great range of finishes, etc. imported from the USA. Have a look for yourselves!



Ben's second rubber band gun has lots of moving parts, which were all made from wood that Ben and his granddad laminated themselves and carefully cut out and shaped using a scrollsaw. The trigger also cocks the hammer back and fires the rubber band when the hammer falls – just the same as a real revolver!



Ben Roch – an aspiring young woodworker

Turned bowl made from spalted wood. The wood was mounted on the lathe and approximately shaped using a spindle roughing gouge. He then used smaller bowl and spindle gouges to achieve a smoother finish

Ben Roch: one to watch

Ben has to be one of the youngest makers we've featured, but by no means is his talent any less. Aged just 13 years old, Ben has a real love for his design and technology lessons at school and gets into the workshop as much as he can. Although he has experience in using tools, he realises he has a long way to go and lots to learn.

Despite his age, Ben has already completed a great deal of woodworking projects under the guidance of his granddad: "I love to be outside in the workshop with him," Ben comments, "we have made an electric go kart, which is powered by a rechargeable electric drill; it doesn't go very fast but we built it as a challenge, rather than something for racing. I have also turned a wooden bowl and a wooden pen using the lathe – both were a lot of fun to do. We have made two rubber band guns: the first one very simple but the second one quite complex, which took many hours to complete." In addition to these, he has also since made a chess board and pieces, again with help from his granddad as this project required the use of the circular saw.

Other hobbies Ben enjoys include clay target shooting, cricket and he has a real love of music and playing various instruments.

In terms of the future, things are looking bright for Ben, and we very much hope that this love of woodworking grows. It is also great to see that his granddad is passing on his skills and nurturing Ben's talent, and we very much hope that this is just the beginning of a long career working with wood!

It can be frustrating, not to mention disappointing, when you return to a job only to find that all your handiwork has been spoiled by poor paintwork from the client. You can spend days on a project trying to achieve the best possible result, only to have your efforts ruined. Oddly, the client was quite pedantic about the standard of woodwork expected before I started. This happened to me recently, but how many of us would make a comment, I wonder? I refrained. It makes you want to pull your hair out, though some of us would find that pretty challenging!

SPRING PROJECT – COAT RACK

TAKES: One weekend
TOOLS NEEDED: Marking tools, straightedge, bench and block planes, spokeshave or sanding drum, drill and bits, jigsaw or bandsaw, router and bits, biscuit jointer, hand saw or circular saw

Mission accomplished

Phil Davy shows you how to make a neat little coat rack in the Mission style – one which is well known for its understated elegance and straight lines

Although I'm more familiar with traditional Shaker furniture, I've always found a certain appeal to Mission furniture. It has an understated elegance to it, predominantly featuring straight lines, with very few curves. Originating in the Spanish missions of California and America's southwestern states some 100 years ago, the Mission style was pretty much the equivalent of what was being produced during the Arts & Crafts period in Britain. It was usually made from oak using quartersawn boards and frequently stained (or fumed) a darker brown to highlight the timber's medullary rays, which would really stand out.

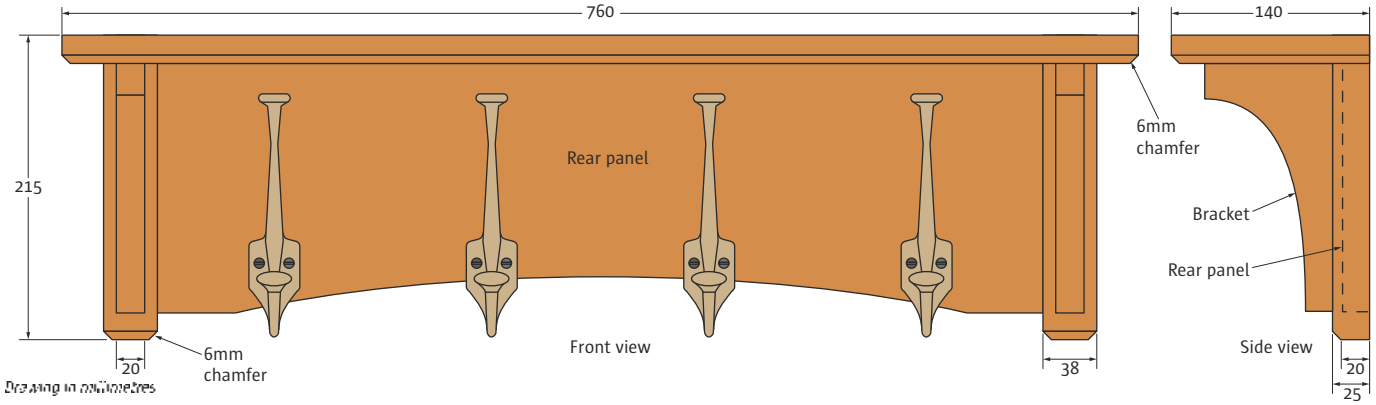
I still have an assortment of European and American oak boards in the workshop bought over recent years when the opportunity seemed too good to pass up. It's obviously best to build any project from exactly the same batch, as a mix of different timbers might not match up. I used a mix of offcuts from a couple of boards, and actually the visual difference is hard to see. If you're faced with an obvious colour variation, one solution is to bleach the timber once you've completed the project. After rinsing off the bleach and allowing the oak to dry, lightly sand and then use a suitable stain to gain an even colour. Always experiment on offcuts first, though.

Construction of the coat rack is pretty easy, making use of biscuits for jointing. Probably the most awkward part is forming a consistent curve to the lower edge of the main panel. It's harder to produce a shallow curve than one with a tighter radius. After cutting with a jigsaw, I used a spokeshave to clean up the curve, though this is much easier to do in softwood. The most reliable method is to first cut an accurate template from 6mm ply or MDF, taking time to get this precise. With a suitable bearing-guided cutter you can then rout the oak to the exact symmetrical curve, with no cleaning up to do after cutting.

It's a good idea to buy the actual hooks before you start cutting any timber, as you may need to increase the height of the back panel to accommodate them. I got mine from The Door Knocker Company (www.thedoorknockercompany.co.uk) based in Shropshire, which sells a fascinating range of period hardware, so you should be able to find something suitable. To give the project some authenticity I chose cast-iron hardware in its natural grey finish. Unless you obtain hardware with a lacquered finish you should spray grey iron items before fitting, as they'll rust with the slightest hint of moisture in the air. It's not advisable to fit untreated iron to oak, either, as the tannin will react with the metal to create black stains. Use clear or black satin lacquer, depending on the effect you want. You can, of course, make the coat rack any length you like, increasing or reducing the number of hooks as necessary.

Finally the rack can be sanded and oiled, but remove the hooks first. I brushed on two coats of my current favourite finish, Chestnut finishing oil, wiping off the excess after a few minutes. **GW**

FIG.1 Mission coat rack



STEP 1. Prepare your timber to width and thickness, planing the face side and edge on each board first

STEP 2. Saw rear and top boards to length, leaving them a tad oversize for cleaning up with a plane

STEP 3. Plane the board ends square, working from each end towards the middle to prevent any splitting

STEP 4. Draw the lower curve on the back by flexing a steel rule or narrow batten between two cramped offcuts

STEP 5. Next, carefully cut the curve on the waste side of the line, either on a bandsaw or with a jigsaw

STEP 6. Clean up the curve with a spokeshave. Alternatively, use a sanding drum fitted in a drill stand if you prefer

STEP 7. Cut slots for biscuits in the ends of the rear panel. These are for attaching the end pieces later

STEP 8. Saw the shelf to length and plane the end-grain. Mark out biscuit positions on the shelf and back panel

STEP 9. Plane the two end pieces to size, and then cut slots. Next, rout a chamfer around their lower edges

STEP 10. Sand the back panel and underside of the shelf before gluing the rack together

STEP 11. Cramp end pieces to the panel using PVA glue. I find masking tape makes cleaning up that much easier

STEP 12. If necessary, you can tidy up your routed chamfers with a few strokes from a sanding block

SPRING PROJECT – COAT RACK (continued)

STEP 13. Use No.20 biscuits for fixing the upper shelf to the rear panel. This size is also used for the end pieces

STEP 14. Glue the rear panel and shelf together, checking for square as you tighten the clamps

STEP 15. Trim the upper shelf edge flush at the rear of the coat rack with a smoothing plane

STEP 16. The shelf is supported by shaped brackets. A card template will help you get an even curve

STEP 17. Draw around the template on both brackets, and then cut these carefully with a bandsaw or jigsaw

STEP 18. Tidy up the curves of each bracket with a sanding drum or spokeshave, making sure you keep edges square

STEP 19. Glue a bracket to each end piece and cramp them together. Check for centrality

STEP 20. A single screw fixes the shelf to the top of each bracket. Counterbore and plug the holes

STEP 21. Drill a 13mm hole into the rear face of each end piece; this creates clearance

OUT & ABOUT

Almost totally tools

After visiting last year's Totally Tools & DIY Show (www.totallydiy.co.uk) I remember mentioning that a few more power tools would be welcome at future events. Someone must have heard me, as noticeable for 2016 were several new brands, with the focus seemingly on 18V brushless drills. It was good to see the re-emergence of Sparky, whose distinctive purple power tools we tested some years ago. With a couple of neat, compact 18V drill drivers on the stand along with some sturdy circular saws, what really caught my eye was their new power planer. Most planers have two 82mm knives, though this model is equipped with three of them at 110mm, thus increasing the cutting capacity of this handy tool.

Neilsen Tools made their show debut with their 18V brushless combi drill on display, presumably from the Far East. Nothing too revolutionary here, but it looked good and who knows what could be up their grey and red sleeves...

More new tools

It was a surprise to come across pro brand Hitachi, one of the few manufacturers (for now) with a 6.0Ah battery in their line-up. Their new brushless combi drill delivers so much torque that it's equipped with a huge side handle to tame the beast.

Closer to home, Draper were launching their StormForce cordless drill, presumably the first of a new range. A departure from their familiar blue livery, let's hope punters don't get them mixed up with another well-known mid-range brand. In the hand tool circus Draper also unveiled a colourful range of Venom hardpoint saws, available in triple- and double-ground varieties (which Andy King will be testing in *GW*306), designed to make it easier when selecting the best tool for first or second fix use.

Draper's StormForce cordless drill

Sparky's new power planer

Neilsen's 18V brushless combi drill

Hitachi's new brushless combi drill

Andy King will be testing Draper's Venom hardpoint saws in the next issue

Mirka has just launched a new range of Abranet abrasive belts

This range of abrasives from Albion is ideal for small-scale woodworking projects

This handy jig from Speedeck enables you to get the spacing right every time on your decking projects

Abrasives for all

If you use Abranet products you'll appreciate just how efficient their abrasives are, with thousands of holes designed to improve dust extraction when sanding. Mirka have now developed the same mesh for belt sanders, which is good news for fans of these heavy-duty power tools. Belts will be available in a range of sizes and grits.

For smaller scale woodwork, such as model making or musical instrument building, you often need very fine abrasives at the finishing stage. New exhibitor Albion Alloys were showing a range of specialist Canadian sanding products, with micro cloths and pads starting at 1,500 grit and going up to an incredibly fine 12,000 grit. In various formats, these helpfully have the grades stamped on the reverse of each item and are ideal for intricate, fine woodwork as well as metalwork.

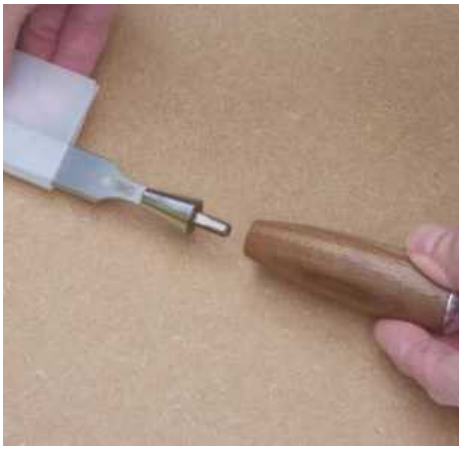
Decking sorted

If you have a major decking project ahead, anything to speed up the board-laying process is welcome. New from the USA is Speedeck, a simple jig to enable you to get the spacing right every time. Made from tough polyethylene, prongs locate either side of the boards, holding things steady while fixing takes place. Three sizes are available to accommodate different widths.

So, Coventry's Ricoh Arena is still the venue for tracking down interesting new gadgets and gizmos, though with noticeably fewer big brands we can only guess at what the 2017 event will have to offer. **GW**

USEFUL KIT/PRODUCT

IBC chisels



TOP TO BOTTOM: Inside each handle is a hardened steel core, threaded to screw on to the blade tang

The stainless steel ferrule is a snug fit over the tang and blends smoothly with the handle

Each chisel is supplied with a unique nylon sleeve, which not only guards the edge but is used to grip the blade safely when unscrewing the handle

Most woodworkers know that many of the world's finest hand tools originate in north America and Canada. Relatively new to these shores is Canadian outfit the Industrial Blade Company (IBC), responsible for some rather classy edge tools. Leading the pack are these elegant bevel-edge chisels, with a choice of walnut or maple handles.

In six common sizes (from 6-25mm), blades are high vanadium A2 tool steel, triple tempered and hardened to 60-62 HRC. The bevelled edges are machined beautifully, with slim, accurate, 90° flats for comfort when gripping the blade for paring. Each tool already has a micro-bevel, though I always hone a new blade before use, no matter how sharp the edge seems when new. It certainly didn't take long to get a polished back on each blade, which are completely flat. Blade length is 93mm on the larger sizes, increasing to 110mm on the narrower tools. Handles are quite compact and I found them extremely comfortable. Those of you with big mitts may find them too small, though. As you'd expect, cutting both hardwood and softwood was a dream.

Handle options

As far as I'm aware these IBC chisels are unique in having removable handles. Inside each one is a hardened steel core, threaded to screw on to the blade tang. At the other end is a domed, solid aluminium striking cap, again threaded on to the steel core. The cap sits flat against the wood, keeping the handle in place. The stainless steel ferrule is a snug fit over the tang and blends smoothly with the handle. Handle length is 88mm, which you'll need to replicate if making your own. Unlike some high-end brands, IBC handles are all the same size. Each chisel is supplied with a unique nylon sleeve, which not only guards the edge but is used to grip the blade safely when unscrewing the handle.

So what are the benefits? You can buy just the blades and fit your own handles, easy enough if you're a woodturner, perhaps following the pattern of a favourite tool that's no longer available. Of course, not every handle pattern suits every woodworker. This is an opportunity to personalise your chisels, too. Time to raid the offcuts bin!

If buying several IBC chisels you could even make do with just one handle, swapping it between blades as required. It also means you can lay the entire blade flat on the stone when first polishing its back, something you can't always do with a chisel if the handle is too bulky. Without handles, the cost of each chisel drops by around £20.

Conclusion

These are gorgeous tools, though we'll probably have to save up if we want to add one to the collection. I guess most woodworkers would buy just one chisel before investing in further tools. Somehow, I don't think you'll be disappointed, though. Prices are the same for walnut or maple options. **GW**

THE GW VERDICT

- **RATING:** 4.5 **out of 5**
- **PRICE: £55.99-£58.95 each (with handle)**
- **WEB: www.johnsontools.co.uk**

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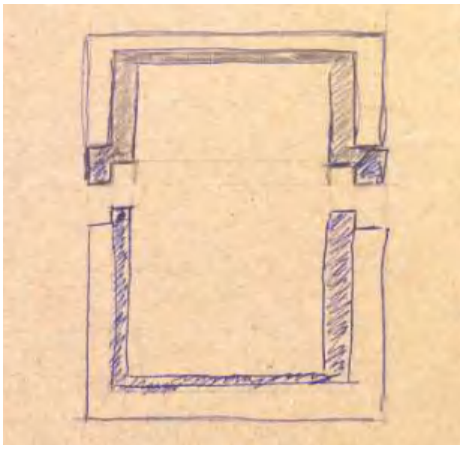
Apple of my eye

Influenced by the late woodturner Dennis Hutchinson, **Les Thorne** tackles the subject of box making this month and makes a great example using apple and rosewood to give a contrasting effect

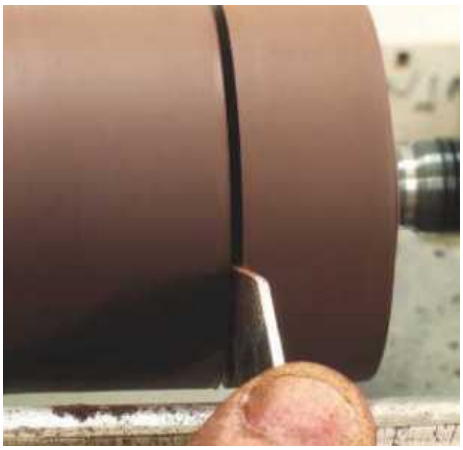
During my turning life, I am extremely lucky to meet so many diverse and talented makers. One such person was a guy called Dennis Hutchinson from Andover in Hampshire, who was a professional furniture sprayer by trade until his untimely death last year. I first met Dennis many years ago at my father's woodturning supplies shop where he was always on the lookout for the next piece of wood for one of his projects. I am lucky enough to be an honorary member of the Test Valley Woodturning Club of which he was an active member for many years, and this meant that I got to see his development as a turner. So what made him a great maker? Well, one thing set him aside from many of his peers and that's the finish he achieved on his work. Coming from a wood finishing background meant that he knew not to leave any sanding marks on his pieces. The time he spent finishing could be seen in most of his work, especially in some of his carved pieces. When I had the pleasure of critiquing his work, I nearly always said that this is someone who takes pleasure in what the rest of us might consider mundane tasks, e.g. sanding. The other thing that I found was that if you gave him some hints towards improving his work, he would always take these on board. The piece I am going to make was an idea that he was developing in his final years: making a box from two pieces of wood so the grain and colour of one will complement the other. I have decided to use two timbers that have a large colour contrast, but I could equally have used a burr for one part, which would give an interesting effect. **GW**



STEP 1. First, draw out the box to get an idea of where the two different woods will appear in the make-up. You don't want too much of the lighter timber showing on the outside

STEP 2. Any timber could be used for this but I thought I would use something a little special, so violet rosewood and apple where chosen. Both are hard, dense and dry and ideal for box making

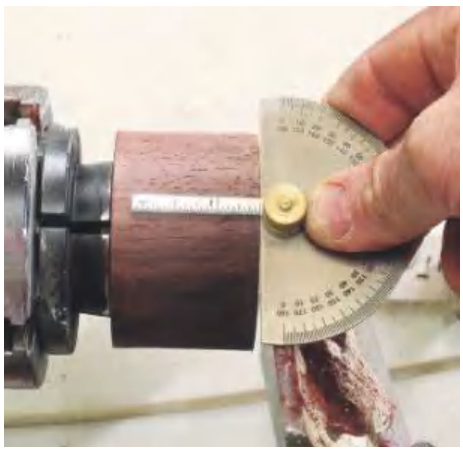
STEP 3. The next job is to mount the rosewood between centres and make it round before putting a chucking spigot on either end – this is exactly the same as making a standard turned box



STEP 4. When one end of the blank is mounted in the chuck, start to part the lid off. I am using a 2mm parting tool, which helps to keep the waste wood to a minimum

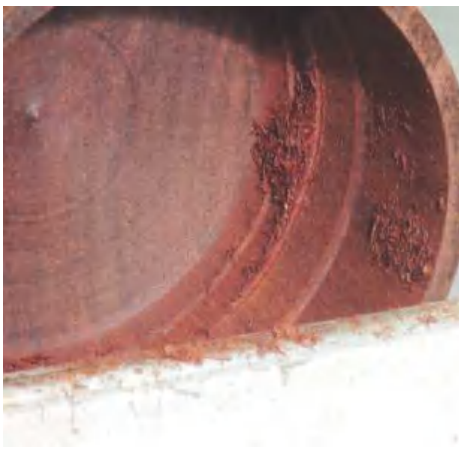
STEP 5. Because the rosewood will heat up very quickly, it is worth finishing the final part of the parting off process with the saw. Do this with the lathe switched off and be careful not to mark the outer surfaces

STEP 6. Hollow the base with the spindle gouge: start in the centre with the flute of the tool pointing at around 10.30, let the tool drill a hole and then pivot the tool tip to the left to make a controlled and even cut



STEP 7. You need to make sure that you go as deep as you can and leave less than 5mm in the bottom. Keep stopping and checking as you can easily cut too far and ruin the project

STEP 8. Squaring off the bottom and the sides is best done using the 10mm multi-purpose round skew. Line the tool up with the bed of the lathe and ease the tool down the side of the wood



STEP 9. As you go deeper into the piece the downward forces on the end of the tool become greater, so you will need to decrease the size of the cuts as you go down

>

STEP 10. Accuracy rather than finish are the important things here. As you won't see the inside of the rosewood, a pair of bow leg callipers will show you if you have parallel sides

STEP 11. Mount the larger of the two apple pieces by putting a chucking point on end and holding it in your chuck. Take it down to just over the diameter of the rosewood base

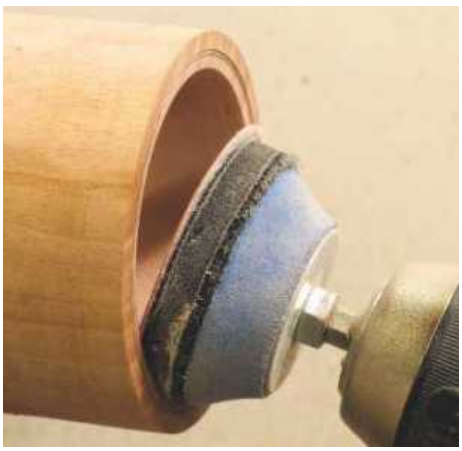
STEP 12. Measure the inside diameter of the box as you will need to transfer this to the apple. This is best done with a pair of Vernier callipers

STEP 13. The outer mark is the diameter of the hole in the rosewood and the inner mark is where you are going to hollow the box out to; this should leave a nice, thin wall thickness to the piece

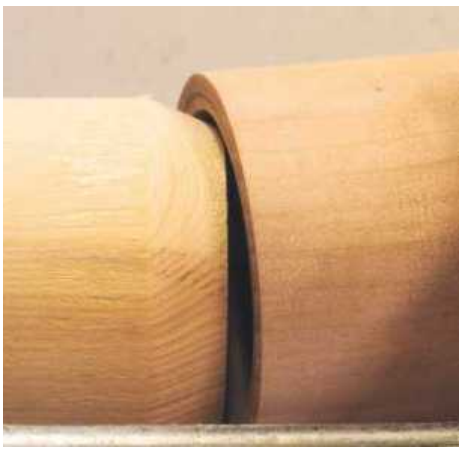
STEP 14. You can clearly see the flute position of the tool here. The pencil (which is in line with the flute) shows that the tool is being presented at around 10 o'clock – a good safe place to make the cut

STEP 15. The round skew is so good at making light shearing cuts to achieve a good finish. The side of the tool will just remove tiny amounts of shavings and will leave the surface needing little sanding

STEP 16. The same tool can be used across the bottom. Keep the tool horizontal and slide it sideways, taking light cuts as you go. Make sure that you don't put the points of the tool in contact with the wood, as it will dig in



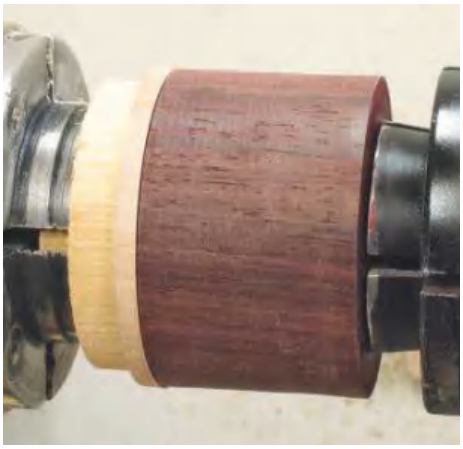
STEP 17. A power sanding pad used inside the vessel is the best option here – I use the 50mm Simon Hope sanding pad, which just fits in and will sand more accurately and generate less heat inside the piece. Heat caused by friction can crack the timber and fruitwoods are particularly prone to this



STEP 18. Once the inside of the box is completed, turn a jam chuck and fit the inside of the box onto it. I gauge the size I need by first turning a taper and offering up the box, then turn this diameter down to achieve a tight fit

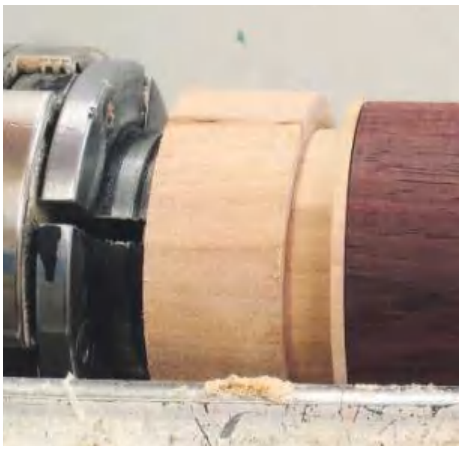
STEP 19. Once the apple is mounted up on the jam chuck, turn it down to fit inside the rosewood base. The little shoulder will be the part of the light timber that will be seen from the outside

STEP 20. The fit does need to be really tight here so remember to creep up on the correct diameter rather than going for it hell for leather. Remember that it's much easier to take more off than trying to add it back on



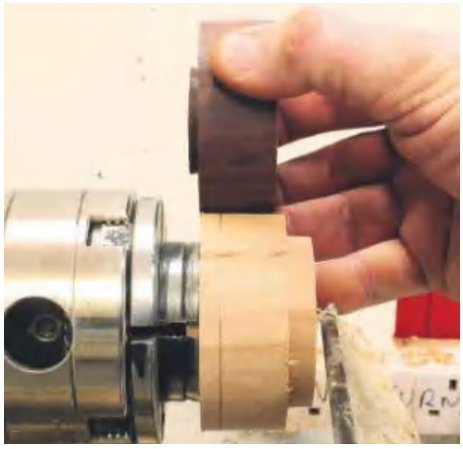
STEP 21. This project is easier if you have more than one chuck at your disposal. Here I am offering up the rosewood to make sure that it fits perfectly, then it needs gluing on using a good quality PVA wood glue

STEP 22. The amount of rim that you leave on is up to you – I think that less is more so I removed some of the apple off the top by using a push cut with a gouge. Make every cut count: a dig in here could destroy all your hard work

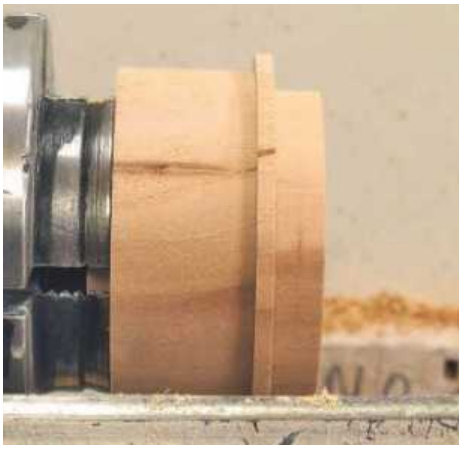


STEP 23. Mount the other piece of apple in the chuck and then cut a spigot that will fit snuggly into the base. I like to make the fit so it goes on easily but with no sideways movement

STEP 24. True up the face of the timber using a push cut from left to right, which will ensure there will be no tear-out on the outer edge. The lid then needs to be hollowed out and finished



STEP 25. Offer up the rosewood lid part to gauge the depth that the apple will need to be so it fits inside. The pencil mark indicates where the apple insert should be parted off



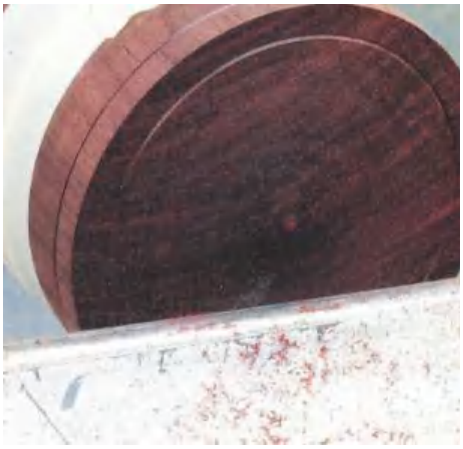
STEP 26. Turn the outside of the apple down to create a flange that the outer lid will sit up against. This needs to be parallel otherwise you will have some problems fitting it in the rosewood

STEP 27. Mount the rosewood lid into the chuck and hollow the inside to accept the apple insert. Once you have a really good fit, glue the liner in but you need to make sure the glue is dry before moving on to the next stage

>

STEP 28. The piece can now be trued up using the spindle gouge; I am putting a slight concave shape across the joint to give the box a waisted appearance

STEP 29. With the base mounted in the chuck now is the time to jam the lid on. If you find it's a bit loose you can use a piece of thin paper; this will ensure that the lid can't spin

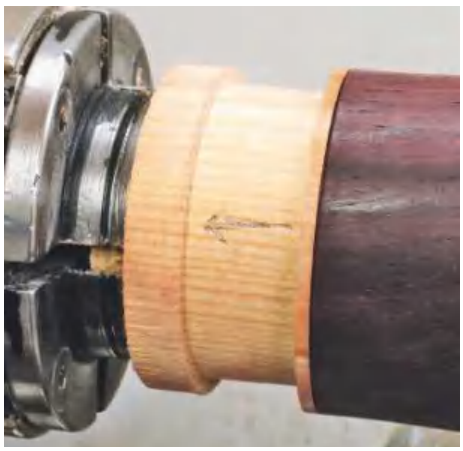


STEP 30. Add some masking tape for extra security and use the spindle gouge to cut away the spigot. Support the wood with the tailstock for as long as possible, which will afford you extra precaution

STEP 31. Add some decorative grooves using the point of the skew chisel; this adds a little interest to the piece. The rosewood is very dense so a good finish can be achieved straight off the tool

STEP 32. This little abrasive holder is great for keeping everything in order when working through the different grades of abrasive – picking up one in the wrong order will often mean that you have to start again

STEP 33. You can see from the state of my hand the problems of working with colourful timber: you will find that the red dust from the rosewood will contaminate the grain of the lighter wood if you use an opened-grained species



STEP 34. The base needs to be reversed onto a jam chuck so you can remove the spigot. To achieve accuracy and the maximum strength from the fixing, the top of the box needs to be right up against the shoulder

STEP 35. With the help of some masking tape, turn away the spigot, leave the base slightly concave, then add your desired finish – I used sanding sealer followed by gloss lacquer

STEP 36. The completed box is very striking and ideal for holding precious little items!

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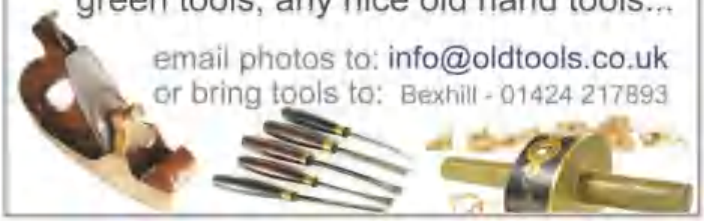

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Next month

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Barriers to becoming a professional

This month **Michael Huntley** muses about what it is that stops students from achieving their 'dream' job as well as discussing keys to success and the importance of actually wanting to succeed

For 99.9% of us, becoming a professional requires hard work. There is a saying '1% inspiration and 99% perspiration', but if you enjoy it, it is easy to do the practice. However, the practice at the bench is essential, day after day! This month I have been musing about what it is that stops students from achieving their 'dream' job. I have come up with the following headings: time, money, location and will-power.

Keys to success

Obviously you must have the time to devote to the practice of woodwork, and this practice must be regular, just like a budding musician needs to practise regularly. You also need money – OK, some grants are available, but in general you will need to be able to support yourself and your family as well as buy about £3,000 worth of tools. Yes, you can make a start with a three figure expenditure not a four figure one, but you need some reserves to spend on extra tools when the need arises. I have been quoted a figure of £6,000 as a start up tool kit by one private establishment that shall remain nameless!

"Location, location…", well you know the phrase, but it really is important. You have to have somewhere to do your practice. If you are unable to set aside a space indoors, then it means a shed or covered space in the garden, but the weather will impact on your learning and practice. It will also mean that tools need to be protected and transported and that timber moisture content will be subject to the vagaries of the prevailing winds. So a good workshop space for your practice is really a 'must have'. Some would also say that you must have a bench, and I agree that a new bench is nice, but it is not essential, after all – you are learning woodwork, so build your own. Not a fancy one to start with, but a simple one such as the bench shown in Drew Langsner's *The Chairmaker's Workshop*.

Last but not least…

Now lastly, and probably most important, is your mental approach. It is now well-known in sports science that races are won 'in the head'. You have to actually want to, not just dream about, becoming a woodworker. Ask anyone: it is very hard work; it is very hard to earn a living; it is not a 37.5 hour a week job; it is not a job with regular pay; it will take you away from your family and children on occasion, so you have to have that, impossible to explain, 'need' to be working with wood. If you don't, you won't make your living out of woodwork. Sorry! **GW**

"You have to actually want to, not just dream about, becoming a woodworker"

Successful Level 1 students now moving on to Level 2 cabinetmaking at my local college – Bridgwater, Somerset. By going to college they have help with where to learn, how to learn and mentoring to help them find the endurance to complete the professional training

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